



## Radiative recombination and photoionization cross sections for heavy element impurities in plasmas: II. Ions of Si, Cl, Ar, Ti, Cr, Kr, and Xe

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### ABSTRACT

Total cross sections for radiative recombination with an electron for 36 ions of Si, Cl, Ar, Ti, Cr, Kr, and Xe as well as subshell photoionization cross sections are presented. The electron kinetic energy is  $\lesssim 50$  keV. The calculations were performed using the relativistic Dirac-Fock method and the results have been included in a database of radiative recombination and photoionization cross sections for the heavy element impurity ions occurring in plasmas. The data are required for modelling fusion and astrophysical plasmas. To obtain the total radiative recombination cross section, calculations have been carried out for ground and all excited electron states up to states with the principal quantum number  $n = 20$ . The subshell photoionization cross sections for all states with  $n \leq 12$  and orbital momenta  $\ell \leq 6$  have been fitted by an analytical expression with five fit parameters which are tabulated.

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## 1. Introduction

We present photoionization cross sections (PCS) and radiative recombination cross sections (RRCS) for ground and excited electron states of 36 ions of the following elements: Si, Cl, Ar, Ti, Cr, Kr, and Xe. The electron kinetic energy range is 1 eV–50 keV for these elements with the exception of Kr and Xe for which the energy range is 4 eV–50 keV. The results form a new part of the unified database of PCS and RRCS for the heavy element impurity ions occurring in plasmas. These data are required for modelling fusion and astrophysical plasmas. The first part of the database contains PCS and RRCS for 31 ions of Fe, Ni, Cu, Mo, and W [1]. In the same manner as in Ref. [1], subshell PCS and RRCS were calculated for all electron states up to states with the principal quantum number  $n = 20$ . Total RRCS were obtained including contributions of all these states. The subshell PCS for states with  $n \leq 12$  and orbital quantum number  $\ell \leq 6$  were fitted by an analytical expression with five fit parameters.

We consider the following ionic states which are the most important in plasmas studies: the fully stripped and H-like ions, the most stable He-, Ne-, Ar-, and Kr-like ions with closed shells, and the stable Ni-like ion having the closed 3d shell. Specific ions are listed in Table A.

The calculations were performed with the same model as in Ref. [1]. The fully relativistic treatment of the photoionization process was used. Electron wavefunctions were obtained within the Dirac–Fock (DF) method where the exchange electron interaction was taken into account exactly, both between the bound electrons and between bound and free electrons. As was discussed in Ref. [1], PCS obtained by the DF method and by the commonly used Dirac–Slater method where the exchange is taken into consideration approximately, may differ significantly, up to ~100%, even at high energy, especially for the low-excited electron states of low-charged ions, which we note make the main contribution to the total RRCS.

Correlation effects, which are ignored in the DF model, have also been discussed in Ref. [1]. Because we deal with ions having only one electron above closed shells or the He-like ions, a comparison was given for the Li-like  $\text{Ne}^{7+}$  and  $\text{Fe}^{23+}$  ions between  $\sigma_{\text{ph}}(E_k)$  calculated within the DF method and the R-matrix method where

the electron correlations were included. The average deviations of our values from  $\sigma_{\text{ph}}(E_k)$  obtained using the R-matrix method were found to be small (3.7% for  $\text{Ne}^{7+}$  and 1.6% for  $\text{Fe}^{23+}$ ).

However, in several specific cases, correlation effects may be important. For example, it is well-known that the photoionization of the 4d subshells in atoms and ions between Pd and Ba is dominated by the  $4d \rightarrow 4f$  giant resonance. In our paper [2], the 4d PCS as well as photoelectron spectra in atomic barium were calculated in the framework of the multiconfiguration DF method. The giant resonance was shown in Ref. [3] to considerably affect radiative recombination (RR) and to significantly modify the nonresonant RR background. This mechanism named “polarization recombination” (PR) was studied in Ref. [3], in particular, for  $\text{Xe}^{8+}$ . An enhancement of the RR and PR rates was found to be considerable at temperatures from 10 eV to 100 eV, being more than twofold at 20 eV. This effect manifests only for  $\text{Xe}^{8+}$  among ions under consideration in the present paper.

The effect of the finite nuclear size and all multipoles of the photon field were taken into account. The impact of nondipole effects on RRCS and PCS was assessed in Ref. [4]. The calculations were described in more detail in Refs. [1,5].

Radiative recombination of the electron with the  $N$ -electron ion gives rise to the  $(N + 1)$ -electron ion. The subshell RRCS  $\sigma_{\text{rr}}^{(nk)}$  for the recombining ion when the electron is captured to the subshell with quantum numbers  $n$  and  $\kappa = (2j + 1)(\ell - j)$ , where  $\ell$  is the orbital and  $j$  is the total angular momentum of the electron, can be expressed in terms of the cross section  $\sigma_{\text{ph}}^{(nk)}$  of the time-reversed photoionization process. The transfer coefficient can be derived from the principle of detailed balance.

The exact relativistic relationship between PCS and RRCS for the subshell  $nk$  can be written as

$$\sigma_{\text{rr}}^{(nk)} = \frac{\tilde{k}^2 q_v}{2\tilde{E}_k + \tilde{E}_k^2} \sigma_{\text{ph}}^{(nk)}. \quad (1)$$

In Eq. (1),  $\tilde{k} = k/m_0 c^2$  is the photon energy,  $\tilde{E}_k = E_k/m_0 c^2$  is the electron kinetic energy, and  $q_v$  is the number of vacancies in the subshell prior to recombination. In the nonrelativistic approximation, the relationship has the form

$$\sigma_{\text{rr}}^{(nk)} = \frac{\tilde{k}^2 q_v}{2\tilde{E}_k} \sigma_{\text{ph}}^{(nk)}. \quad (2)$$

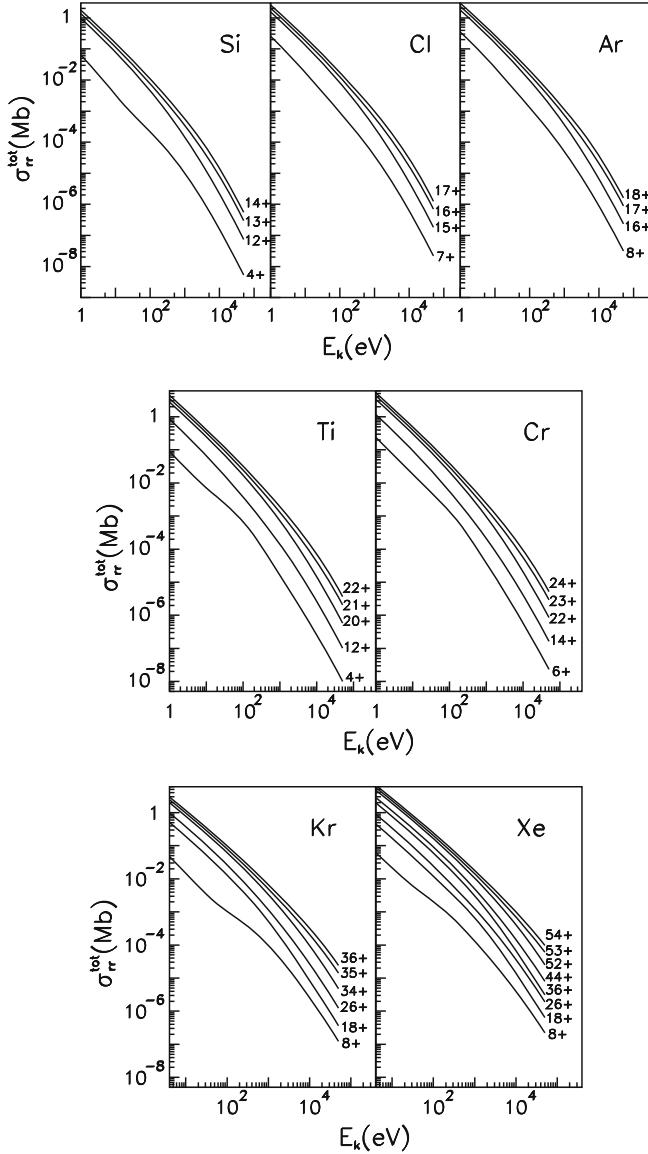
In the present paper, RRCS were calculated using the relativistic formula in Eq. (1) while the nonrelativistic Eq. (2) was used in Ref. [1]. For the energies under consideration,  $E_k \lesssim 50$  keV, the difference between RRCS obtained with the two expressions, is modest,  $\lesssim 5\%$ . However, it should be kept in mind that the difference increases with increasing energy,  $E_k$ , and reaches ~100% at  $E_k = 1000$  keV [4].

The subshell cross sections were calculated with a numerical accuracy of 0.1%. The calculation accuracy was verified by comparing our results with benchmark calculations by Ichihara and Eichler [6] for RR of the bare nucleus with an electron (see Ref. [4]).

**Table A**

Specific ions considered in the present paper.

Configuration	Ion charge					
	Si	Cl	Ar	Ti	Cr	Xe
Bare nucleus	14	17	18	22	24	36
H-like	13	16	17	21	23	53
He-like	12	15	16	20	22	52
Ne-like	4	7	8	12	14	44
Ar-like				4	6	36
[Ar]3d <sup>4</sup> <sub>3/2</sub> 3d <sup>6</sup> <sub>5/2</sub>					8	26
Kr-like						18
Pd-like						8



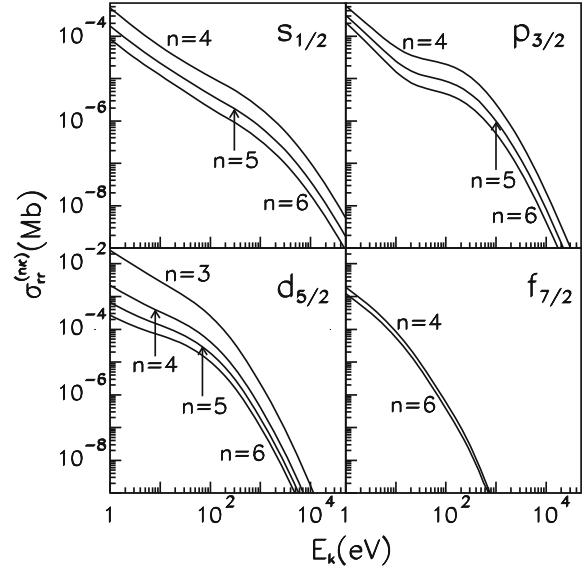
**Fig. 1.** Total radiative recombination cross sections in Mb for ions of Si, Cl, Ar, Ti, Cr, Kr, and Xe.

Total RRCS is defined as a sum of partial cross sections  $\sigma_{rr}^{(nk)}$  over all electron states as follows:

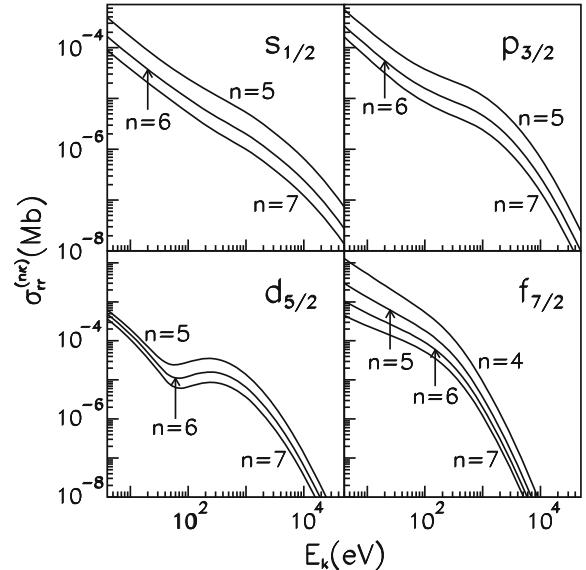
$$\sigma_{rr}^{\text{tot}} = \sum_{n=n_{\min}}^{\infty} \sum_{\kappa=\mp 1, \mp 2, \dots, -n} \sigma_{rr}^{(nk)}, \quad (3)$$

where  $n_{\min}$  combined with the appropriate value of  $\kappa$  refers to the ground state of the recombined ion. In a real plasmas, however, there is a cutoff of bound states from density effects, above which recombination is not meaningful. In particular, for fusion plasmas with electron density of the order of  $10^{14}/\text{cm}^3$ , the upper limit on the quantum number  $n$  is  $\lesssim 20$ . Because of this, the summation in Eq. (3) was performed up to  $n = 20$ . The correction associated with higher terms may be added if necessary (for example, in the case of the low-density astrophysical plasmas) [1].

Total RRCS are presented in Table 1 for 41 values of the electron kinetic energy within the range  $4 \text{ eV} \leq E_k \leq 50 \text{ keV}$ . Energy points are logarithmic over the range. We also include six equidistant values of the energy in the range near the threshold  $1 \text{ eV} \leq E_k \leq 3.5 \text{ eV}$ .



**Fig. 2.** RRCS versus the electron energy for the  $ns_{1/2}$ ,  $np_{3/2}$ ,  $nd_{5/2}$ , and  $nf_{7/2}$  states of the ion  $Ti^{4+}$ .



**Fig. 3.** RRCS versus the electron energy for the  $ns_{1/2}$ ,  $np_{3/2}$ ,  $nd_{5/2}$ , and  $nf_{7/2}$  states of the ion  $Xe^{8+}$ .

for ions of Si, Cl, Ar, Ti, and Cr which are of interest for astrophysical plasmas as well.

The electron energy dependence of total RRCS is shown in Fig. 1. As is seen, for the lowest-charged ions, the energy dependence of  $\sigma_{rr}^{\text{tot}}(E_k)$  is a nonmonotonic function in the range  $E_k \lesssim 500 \text{ eV}$ . This is associated with behavior of partial cross sections  $\sigma_{rr}^{(nk)}(E_k)$  for the  $s$ ,  $p$ , and  $d$  electrons. In Figs. 2 and 3, the  $E_k$ -dependence of  $\sigma_{rr}^{(nk)}$  is shown for several of the lowest states with  $\kappa = -1, -2, -3$ , and  $-4$  in the cases of  $Ti^{4+}$  and  $Xe^{8+}$ , respectively. One can see the Cooper minimum in the RRCS for the  $nd_{5/2}$  state of  $Xe^{8+}$  and well-marked nonmonotonic behavior for the  $np_{3/2}$  state of both ions. The RRCS for the  $ns$  and  $nf$  states have a less distinct nonmonotonic character. As is seen from Fig. 1, for the higher-charged ions, the  $E_k$ -dependence displays smooth monotonic curves.

The bulk of subshell PCS obtained in the calculations were fitted by simple analytical expressions involving five parameters which can be written as follows [7]:

$$\sigma_{\text{ph}}^{(n\kappa)}(k) = \sigma_0 F(y), \quad y = k/k_0, \quad (4)$$

where  $\sigma_0$  and  $k_0$  are fit parameters and the function  $F(y)$  has the form

$$F(y) = [(y - 1)^2 + y_w^2] y^{-Q} \left(1 + \sqrt{y/y_a}\right)^{-p}. \quad (5)$$

Here  $y_w$ ,  $y_a$  and  $p$  are three additional fit parameters, and  $Q = 5.5 + \ell - 0.5p$ . With Eqs. (4) and (5), the fit parameters were obtained by minimizing the mean-square deviation from the calculated values. We used the simplex search method developed by Nelder and Mead [8].

Fit parameters  $\sigma_0$ ,  $k_0$ ,  $p$ ,  $y_a$ , and  $y_w$  were found for all electron states with quantum numbers  $n \leq 12$  and  $\kappa = \mp 1, \mp 2, \dots, \mp 6, -7$  ( $\ell \leq 6$ ). The fitting procedure was carried out in the photon energy range from  $k_{\min} = E_{\text{th}} + 1 \text{ eV}$  ( $k_{\min} = E_{\text{th}} + 4 \text{ eV}$  for Kr and Xe) to the energy  $k_{\max}$  where  $\sigma_{\text{ph}}^{(n\kappa)}(k_{\max})$  falls by five orders of magnitude as compared with its maximum value, the energy  $E_k = k_{\max} - E_{\text{th}}$  being less than 50 keV. Here  $E_{\text{th}}$  is the ionization threshold energy. Usually,  $k_{\max}$  is of the order of  $\sim 100E_{\text{th}}$  for the  $s$ ,  $p$ ,  $d$ , and  $f$  shells and of the order of  $\sim 10E_{\text{th}}$  for the  $g$ ,  $h$ , and  $i$  shells. In rare cases for the very inner shells of the highest-charged ions (the 1s shell of recombined ions  $\text{Xe}^{52+}$  and  $\text{Xe}^{53+}$ ),  $k_{\max}$  may be of the order of  $\sim 2E_{\text{th}}$  due to the large magnitude of  $E_{\text{th}}$  in those cases. The values of the ionization threshold energy  $E_{\text{th}}$  obtained in the Dirac–Fock calculations, the maximum energy  $k_{\max}$ , and the fit parameters for  $\sim 4000$  electron states of the ions under consideration are given in Table 2.

To assess the accuracy of the fitting procedure, we found the relative root-mean-square error  $\delta_{\text{av}}$  as follows:

$$\delta_{\text{av}} = \sqrt{\frac{1}{M} \sum_{i=1}^M \left[ \frac{\sigma_{\text{calc}}^{(n\kappa)}(k_i) - \sigma_{\text{fit}}^{(n\kappa)}(k_i)}{\sigma_{\text{calc}}^{(n\kappa)}(k_i)} \right]^2} \cdot 100\%, \quad (6)$$

where  $M$  is the number of points involved in the fitting, and  $\sigma_{\text{calc}}^{(n\kappa)}(k_i)$  and  $\sigma_{\text{fit}}^{(n\kappa)}(k_i)$  are values of PCS calculated and obtained in the fitting, respectively. In general, the fit accuracy was good with  $\delta_{\text{av}} \lesssim 2\%$ . However, there exist cases where the error may be greater, for example, the  $ns$  and  $np$  shells of low-charged ions. The worst-fitting cases in the present calculation are related to the  $11p$  and  $12p$  shells of the lowest-charged ion  $\text{Cr}^{5+}$  where  $\delta_{\text{av}}$  reaches 9%. The error  $\delta_{\text{av}}$  for each shell is also presented in Table 2.

Using the fit parameters and Eqs. (4) and (5), one can obtain PCS,  $\sigma_{\text{ph}}^{(n\kappa)}(k)$ , per one electron at any photon energy from the range  $k_{\min}$  to  $k_{\max}$ . The associated value of RRCS,  $\sigma_{\text{rr}}^{(n\kappa)}(k)$ , may also be obtained with Eq. (1).

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## Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.adt.2009.08.003.

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## Explanation of Tables

**Table 1.** Total radiative recombination cross sections.

$E_k$	Electron kinetic energy in eV
$\sigma_{\text{rr}}^{\text{tot}}$	Total RRCS (see Eq. (3)) in Mb ( $=10^{-18} \text{ cm}^2$ )
$\text{Si}^{4+}$ , etc.	Recombining ion

**Table 2.** Fit parameters for photoionization cross sections.

$E_{\text{th}}$	Ionization threshold energy in eV
$k_{\text{max}}$	Maximum photon energy in eV to which the fitting was performed
$k_0, \sigma_0$	Fit parameters used with Eq. (4) in eV and Mb, respectively
$p, y_a, y_w$	Dimensionless fit parameters used with Eq. (5)
$\delta_{\text{av}}$	Relative root-mean-square error in percent
$\text{Si}^{3+}$ , etc.	Recombined ion

Here the decimal order is presented to the right of an entry

**Table 1**

Total radiative recombination cross sections. See page 991 for Explanation of Tables.

Si, Cl	$\sigma_{\text{rr}}^{\text{tot}}$ , Mb					
$E_k$ , eV	Si <sup>4+</sup>	Si <sup>12+</sup>	Si <sup>13+</sup>	Si <sup>14+</sup>	Cl <sup>7+</sup>	Cl <sup>15+</sup>
1.00	6.453–02	9.762–01	1.355+00	1.766+00	2.591–01	1.541+00
1.50	3.950–02	6.404–01	8.929–01	1.166+00	1.657–01	1.016+00
2.00	2.764–02	4.731–01	6.621–01	8.670–01	1.199–01	7.542–01
2.50	2.085–02	3.731–01	5.241–01	6.877–01	9.286–02	5.973–01
3.00	1.651–02	3.068–01	4.323–01	5.685–01	7.516–02	4.930–01
3.50	1.353–02	2.596–01	3.670–01	4.835–01	6.274–02	4.186–01
4.00	1.137–02	2.244–01	3.182–01	4.199–01	5.357–02	3.630–01
5.07	8.341–03	1.730–01	2.467–01	3.268–01	4.039–02	2.816–01
6.41	6.105–03	1.329–01	1.908–01	2.537–01	3.033–02	2.177–01
8.12	4.464–03	1.017–01	1.471–01	1.964–01	2.269–02	1.678–01
10.28	3.266–03	7.754–02	1.130–01	1.517–01	1.691–02	1.288–01
13.02	2.394–03	5.887–02	8.659–02	1.168–01	1.257–02	9.854–02
16.48	1.770–03	4.451–02	6.613–02	8.973–02	9.313–03	7.507–02
20.87	1.320–03	3.351–02	5.034–02	6.874–02	6.886–03	5.696–02
26.43	9.869–04	2.513–02	3.820–02	5.251–02	5.083–03	4.304–02
33.46	7.444–04	1.875–02	2.890–02	4.001–02	3.747–03	3.239–02
42.36	5.664–04	1.393–02	2.179–02	3.040–02	2.761–03	2.426–02
53.64	4.328–04	1.031–02	1.638–02	2.304–02	2.036–03	1.810–02
67.92	3.335–04	7.584–03	1.227–02	1.742–02	1.508–03	1.343–02
86.00	2.563–04	5.553–03	9.161–03	1.313–02	1.105–03	9.926–03
108.89	1.967–04	4.044–03	6.818–03	9.870–03	8.143–04	7.297–03
137.87	1.501–04	2.929–03	5.056–03	7.400–03	5.969–04	5.336–03
174.56	1.135–04	2.115–03	3.740–03	5.531–03	4.365–04	3.881–03
221.03	8.526–05	1.514–03	2.758–03	4.127–03	3.185–04	2.808–03
279.86	6.328–05	1.074–03	2.021–03	3.070–03	2.313–04	2.023–03
354.35	4.648–05	7.564–04	1.476–03	2.270–03	1.668–04	1.444–03
448.67	3.371–05	5.287–04	1.072–03	1.673–03	1.198–04	1.024–03
568.10	2.412–05	3.665–04	7.748–04	1.227–03	8.524–05	7.186–04
719.31	1.703–05	2.521–04	5.571–04	8.954–04	6.013–05	5.008–04
910.77	1.186–05	1.719–04	3.984–04	6.499–04	4.202–05	3.462–04
1153.20	8.145–06	1.163–04	2.832–04	4.687–04	2.905–05	2.373–04
1460.15	5.525–06	7.801–05	2.000–04	3.356–04	1.986–05	1.613–04
1848.80	3.703–06	5.192–05	1.402–04	2.383–04	1.343–05	1.087–04
2340.91	2.456–06	3.428–05	9.741–05	1.676–04	8.984–06	7.261–05
2964.00	1.613–06	2.248–05	6.704–05	1.167–04	5.945–06	4.812–05
3752.94	1.050–06	1.462–05	4.567–05	8.023–05	3.898–06	3.163–05
4751.87	6.779–07	9.442–06	3.075–05	5.448–05	2.534–06	2.064–05
6016.70	4.340–07	6.048–06	2.046–05	3.649–05	1.633–06	1.337–05
7618.19	2.755–07	3.842–06	1.345–05	2.412–05	1.044–06	8.590–06
9645.96	1.734–07	2.419–06	8.723–06	1.571–05	6.624–07	5.476–06
12213.47	1.082–07	1.509–06	5.588–06	1.010–05	4.170–07	3.461–06
15464.38	6.690–08	9.335–07	3.534–06	6.402–06	2.605–07	2.168–06
19580.60	4.100–08	5.720–07	2.208–06	4.008–06	1.613–07	1.346–06
24792.45	2.490–08	3.475–07	1.363–06	2.478–06	9.905–08	8.278–07
31391.56	1.499–08	2.092–07	8.323–07	1.515–06	6.030–08	5.048–07
39747.19	8.950–09	1.250–07	5.029–07	9.165–07	3.640–08	3.052–07
50326.87	5.303–09	7.408–08	3.009–07	5.490–07	2.180–08	1.829–07
Cl, Ar	$\sigma_{\text{rr}}^{\text{tot}}$ , Mb					
$E_k$ , eV	Cl <sup>16+</sup>	Cl <sup>17+</sup>	Ar <sup>8+</sup>	Ar <sup>16+</sup>	Ar <sup>17+</sup>	Ar <sup>18+</sup>
1.00	2.064+00	2.622+00	3.508–01	1.758+00	2.332+00	2.944+00
1.50	1.364+00	1.736+00	2.260–01	1.160+00	1.543+00	1.951+00
2.00	1.015+00	1.294+00	1.644–01	8.621–01	1.149+00	1.455+00
2.50	8.058–01	1.029+00	1.280–01	6.834–01	9.128–01	1.157+00
3.00	6.665–01	8.521–01	1.040–01	5.646–01	7.556–01	9.591–01
3.50	5.672–01	7.261–01	8.711–02	4.799–01	6.434–01	8.178–01
4.00	4.929–01	6.318–01	7.460–02	4.164–01	5.595–01	7.119–01
5.07	3.839–01	4.934–01	5.653–02	3.235–01	4.362–01	5.564–01
6.41	2.982–01	3.844–01	4.267–02	2.506–01	3.393–01	4.340–01
8.12	2.311–01	2.989–01	3.207–02	1.935–01	2.633–01	3.378–01
10.28	1.785–01	2.318–01	2.402–02	1.488–01	2.037–01	2.623–01
13.02	1.375–01	1.793–01	1.792–02	1.141–01	1.571–01	2.032–01
16.48	1.056–01	1.384–01	1.332–02	8.711–02	1.209–01	1.570–01
20.87	8.083–02	1.065–01	9.878–03	6.624–02	9.267–02	1.209–01
26.43	6.167–02	8.170–02	7.304–03	5.017–02	7.082–02	9.293–02
33.46	4.690–02	6.253–02	5.388–03	3.783–02	5.395–02	7.121–02
42.36	3.556–02	4.772–02	3.967–03	2.841–02	4.096–02	5.442–02
53.64	2.687–02	3.633–02	2.918–03	2.124–02	3.100–02	4.148–02
67.92	2.024–02	2.758–02	2.144–03	1.581–02	2.339–02	3.153–02
86.00	1.519–02	2.088–02	1.581–03	1.171–02	1.759–02	2.391–02
108.89	1.137–02	1.577–02	1.153–03	8.631–03	1.318–02	1.808–02
137.87	8.479–03	1.188–02	8.432–04	6.329–03	9.847–03	1.363–02

**Table 1** (continued)

Cl, Ar	$\sigma_{\text{ff}}^{\text{tot}}, \text{Mb}$					
$E_k, \text{eV}$	Cl <sup>16+</sup>	Cl <sup>17+</sup>	Ar <sup>8+</sup>	Ar <sup>16+</sup>	Ar <sup>17+</sup>	Ar <sup>18+</sup>
174.56	6.302–03	8.920–03	6.145–04	4.616–03	7.331–03	1.025–02
221.03	4.667–03	6.680–03	4.450–04	3.348–03	5.437–03	7.689–03
279.86	3.448–03	4.990–03	3.222–04	2.418–03	4.021–03	5.751–03
354.35	2.539–03	3.721–03	2.316–04	1.737–03	2.967–03	4.291–03
448.67	1.856–03	2.759–03	1.656–04	1.233–03	2.175–03	3.193–03
568.10	1.352–03	2.040–03	1.176–04	8.704–04	1.589–03	2.363–03
719.31	9.800–04	1.500–03	8.289–05	6.090–04	1.154–03	1.742–03
910.77	7.064–04	1.098–03	5.789–05	4.224–04	8.335–04	1.279–03
1153.20	5.068–04	8.000–04	4.008–05	2.908–04	5.993–04	9.337–04
1460.15	3.613–04	5.793–04	2.745–05	1.984–04	4.285–04	6.783–04
1848.80	2.560–04	4.169–04	1.861–05	1.342–04	3.046–04	4.894–04
2340.91	1.802–04	2.977–04	1.248–05	9.002–05	2.151–04	3.509–04
2964.00	1.259–04	2.107–04	8.286–06	5.987–05	1.507–04	2.494–04
3752.94	8.710–05	1.477–04	5.448–06	3.950–05	1.048–04	1.757–04
4751.87	5.967–05	1.023–04	3.549–06	2.586–05	7.211–05	1.224–04
6016.70	4.045–05	7.005–05	2.293–06	1.680–05	4.914–05	8.430–05
7618.19	2.710–05	4.732–05	1.470–06	1.083–05	3.310–05	5.732–05
9645.96	1.793–05	3.154–05	9.349–07	6.928–06	2.203–05	3.844–05
12213.47	1.172–05	2.072–05	5.902–07	4.394–06	1.448–05	2.543–05
15464.38	7.557–06	1.343–05	3.696–07	2.762–06	9.393–06	1.659–05
19580.60	4.813–06	8.579–06	2.296–07	1.721–06	6.016–06	1.067–05
24792.45	3.026–06	5.410–06	1.414–07	1.063–06	3.804–06	6.767–06
31391.56	1.880–06	3.368–06	8.637–08	6.506–07	2.376–06	4.237–06
39747.19	1.154–06	2.071–06	5.231–08	3.948–07	1.466–06	2.620–06
50326.87	7.010–07	1.260–06	3.143–08	2.375–07	8.949–07	1.602–06
Ti, Cr	$\sigma_{\text{ff}}^{\text{tot}}, \text{Mb}$					
$E_k, \text{eV}$	Ti <sup>4+</sup>	Ti <sup>12+</sup>	Ti <sup>20+</sup>	Ti <sup>21+</sup>	Ti <sup>22+</sup>	Cr <sup>6+</sup>
1.00	8.865–02	8.407–01	2.764+00	3.570+00	4.419+00	8.865–02
1.50	5.623–02	5.504–01	1.830+00	2.368+00	2.934+00	5.623–02
2.00	4.065–02	4.059–01	1.364+00	1.767+00	2.191+00	4.065–02
2.50	3.162–02	3.195–01	1.085+00	1.407+00	1.746+00	3.162–02
3.00	2.578–02	2.623–01	8.983–01	1.167+00	1.450+00	2.578–02
3.50	2.171–02	2.216–01	7.655–01	9.954–01	1.238+00	2.171–02
4.00	1.874–02	1.913–01	6.660–01	8.671–01	1.079+00	1.874–02
5.07	1.449–02	1.471–01	5.198–01	6.785–01	8.457–01	1.449–02
6.41	1.127–02	1.126–01	4.048–01	5.299–01	6.618–01	1.127–02
8.12	8.819–03	8.587–02	3.143–01	4.129–01	5.169–01	8.819–03
10.28	6.951–03	6.521–02	2.434–01	3.210–01	4.030–01	6.951–03
13.02	5.515–03	4.931–02	1.878–01	2.489–01	3.134–01	5.515–03
16.48	4.406–03	3.712–02	1.444–01	1.925–01	2.432–01	4.406–03
20.87	3.532–03	2.783–02	1.107–01	1.484–01	1.883–01	3.532–03
26.43	2.829–03	2.078–02	8.444–02	1.140–01	1.453–01	2.829–03
33.46	2.257–03	1.546–02	6.418–02	8.737–02	1.119–01	2.257–03
42.36	1.783–03	1.145–02	4.858–02	6.672–02	8.590–02	1.783–03
53.64	1.395–03	8.452–03	3.662–02	5.078–02	6.578–02	1.395–03
67.92	1.072–03	6.215–03	2.748–02	3.853–02	5.023–02	1.072–03
86.00	8.102–04	4.554–03	2.053–02	2.914–02	3.826–02	8.102–04
108.89	5.990–04	3.326–03	1.527–02	2.196–02	2.906–02	5.990–04
137.87	4.342–04	2.420–03	1.130–02	1.650–02	2.201–02	4.342–04
174.56	3.083–04	1.763–03	8.322–03	1.235–02	1.663–02	3.083–04
221.03	2.147–04	1.273–03	6.097–03	9.220–03	1.254–02	2.147–04
279.86	1.471–04	9.130–04	4.443–03	6.855–03	9.420–03	1.471–04
354.35	9.935–05	6.538–04	3.218–03	5.080–03	7.058–03	9.935–05
448.67	6.636–05	4.642–04	2.321–03	3.752–03	5.275–03	6.636–05
568.10	4.401–05	3.286–04	1.663–03	2.765–03	3.935–03	4.401–05
719.31	2.906–05	2.309–04	1.180–03	2.024–03	2.922–03	2.906–05
910.77	1.916–05	1.614–04	8.308–04	1.475–03	2.160–03	1.916–05
1153.20	1.262–05	1.119–04	5.799–04	1.069–03	1.591–03	1.262–05
1460.15	8.320–06	7.699–05	4.014–04	7.712–04	1.165–03	8.320–06
1848.80	5.484–06	5.253–05	2.756–04	5.534–04	8.499–04	5.484–06
2340.91	3.612–06	3.553–05	1.875–04	3.947–04	6.161–04	3.612–06
2964.00	2.375–06	2.382–05	1.264–04	2.798–04	4.439–04	2.375–06
3752.94	1.557–06	1.582–05	8.452–05	1.970–04	3.174–04	1.557–06
4751.87	1.017–06	1.041–05	5.602–05	1.377–04	2.250–04	1.017–06
6016.70	6.608–07	6.793–06	3.685–05	9.534–05	1.579–04	6.608–07
7618.19	4.272–07	4.396–06	2.404–05	6.538–05	1.097–04	4.272–07
9645.96	2.745–07	2.822–06	1.556–05	4.436–05	7.521–05	2.745–07
12213.47	1.753–07	1.797–06	9.988–06	2.974–05	5.091–05	1.753–07
15464.38	1.111–07	1.137–06	6.359–06	1.970–05	3.399–05	1.111–07
19580.60	6.994–08	7.134–07	4.015–06	1.288–05	2.237–05	6.994–08
24792.45	4.369–08	4.443–07	2.513–06	8.313–06	1.451–05	4.369–08

(continued on next page)

**Table 1** (continued)

Ti, Cr	$\sigma_{\text{rr}}^{\text{tot}}, \text{Mb}$									
$E_k, \text{eV}$	Ti <sup>4+</sup>	Ti <sup>12+</sup>	Ti <sup>20+</sup>	Ti <sup>21+</sup>	Ti <sup>22+</sup>	Cr <sup>6+</sup>	Cr <sup>14+</sup>	Cr <sup>22+</sup>	Cr <sup>23+</sup>	Cr <sup>24+</sup>
31391.56	2.706–08	2.744–07	1.559–06	5.296–06	9.286–06	2.706–08	2.744–07	1.559–06	5.296–06	9.286–06
39747.19	1.662–08	1.681–07	9.582–07	3.331–06	5.860–06	1.662–08	1.681–07	9.582–07	3.331–06	5.860–06
50326.87	1.012–08	1.022–07	5.840–07	2.070–06	3.651–06	1.012–08	1.022–07	5.840–07	2.070–06	3.651–06
Kr										
$E_k, \text{eV}$	Kr <sup>8+</sup>	Kr <sup>18+</sup>	Kr <sup>26+</sup>	Kr <sup>34+</sup>	Kr <sup>35+</sup>	Kr <sup>36+</sup>				
4.00	4.697–02	5.118–01	9.801–01	1.990+00	2.465+00	2.955+00				
5.07	3.500–02	3.988–01	7.673–01	1.565+00	1.939+00	2.326+00				
6.41	2.595–02	3.099–01	5.996–01	1.228+00	1.524+00	1.830+00				
8.12	1.915–02	2.401–01	4.674–01	9.632–01	1.197+00	1.438+00				
10.28	1.409–02	1.855–01	3.634–01	7.540–01	9.384–01	1.129+00				
13.02	1.034–02	1.429–01	2.817–01	5.892–01	7.347–01	8.851–01				
16.48	7.604–03	1.096–01	2.177–01	4.593–01	5.741–01	6.928–01				
20.87	5.612–03	8.387–02	1.675–01	3.572–01	4.477–01	5.413–01				
26.43	4.175–03	6.391–02	1.284–01	2.770–01	3.484–01	4.222–01				
33.46	3.141–03	4.855–02	9.804–02	2.141–01	2.704–01	3.286–01				
42.36	2.399–03	3.674–02	7.449–02	1.650–01	2.093–01	2.551–01				
53.64	1.865–03	2.771–02	5.635–02	1.266–01	1.615–01	1.976–01				
67.92	1.476–03	2.082–02	4.242–02	9.684–02	1.242–01	1.526–01				
86.00	1.190–03	1.559–02	3.178–02	7.375–02	9.526–02	1.175–01				
108.89	9.652–04	1.162–02	2.369–02	5.594–02	7.282–02	9.030–02				
137.87	7.855–04	8.622–03	1.757–02	4.226–02	5.549–02	6.918–02				
174.56	6.359–04	6.364–03	1.297–02	3.178–02	4.214–02	5.286–02				
221.03	5.146–04	4.668–03	9.519–03	2.380–02	3.189–02	4.029–02				
279.86	4.108–04	3.400–03	6.952–03	1.774–02	2.407–02	3.062–02				
354.35	3.253–04	2.462–03	5.049–03	1.316–02	1.810–02	2.321–02				
448.67	2.534–04	1.767–03	3.646–03	9.716–03	1.356–02	1.755–02				
568.10	1.947–04	1.249–03	2.618–03	7.137–03	1.013–02	1.323–02				
719.31	1.473–04	8.768–04	1.871–03	5.213–03	7.540–03	9.953–03				
910.77	1.097–04	6.058–04	1.331–03	3.786–03	5.591–03	7.463–03				
1153.20	8.031–05	4.140–04	9.364–04	2.735–03	4.132–03	5.581–03				
1460.15	5.788–05	2.794–04	6.547–04	1.966–03	3.045–03	4.163–03				
1848.80	4.108–05	1.866–04	4.539–04	1.400–03	2.232–03	3.096–03				
2340.91	2.874–05	1.233–04	3.127–04	9.887–04	1.627–03	2.290–03				
2964.00	1.986–05	8.079–05	2.139–04	6.922–04	1.181–03	1.688–03				
3752.94	1.357–05	5.256–05	1.453–04	4.805–04	8.520–04	1.238–03				
4751.87	9.189–06	3.402–05	9.795–05	3.306–04	6.116–04	9.039–04				
6016.70	6.169–06	2.194–05	6.553–05	2.254–04	4.363–04	6.559–04				
7618.19	4.110–06	1.412–05	4.352–05	1.523–04	3.094–04	4.731–04				
9645.96	2.718–06	9.063–06	2.866–05	1.020–04	2.179–04	3.386–04				
12213.47	1.784–06	5.802–06	1.873–05	6.773–05	1.523–04	2.403–04				
15464.38	1.163–06	3.701–06	1.215–05	4.456–05	1.054–04	1.689–04				
19580.60	7.518–07	2.352–06	7.820–06	2.906–05	7.229–05	1.174–04				
24792.45	4.824–07	1.488–06	4.996–06	1.879–05	4.902–05	8.057–05				
31391.56	3.072–07	9.363–07	3.169–06	1.205–05	3.285–05	5.457–05				
39747.19	1.941–07	5.861–07	1.995–06	7.657–06	2.174–05	3.645–05				
50326.87	1.217–07	3.647–07	1.247–06	4.824–06	1.420–05	2.400–05				
Xe										
$E_k, \text{eV}$	$\sigma_{\text{rr}}^{\text{tot}}, \text{Mb}$									
$E_k, \text{eV}$	Xe <sup>8+</sup>	Xe <sup>18+</sup>	Xe <sup>26+</sup>	Xe <sup>36+</sup>	Xe <sup>44+</sup>	Xe <sup>52+</sup>	Xe <sup>53+</sup>	Xe <sup>54+</sup>		
4.00	6.167–02	4.485–01	8.853–01	1.946+00	2.837+00	4.750+00	5.730+00	6.733+00		
5.07	4.693–02	3.493–01	6.929–01	1.530+00	2.233+00	3.743+00	4.518+00	5.310+00		
6.41	3.567–02	2.714–01	5.412–01	1.201+00	1.756+00	2.949+00	3.560+00	4.186+00		
8.12	2.712–02	2.102–01	4.218–01	9.418–01	1.379+00	2.321+00	2.804+00	3.298+00		
10.28	2.065–02	1.624–01	3.278–01	7.372–01	1.082+00	1.826+00	2.207+00	2.597+00		
13.02	1.578–02	1.251–01	2.540–01	5.760–01	8.479–01	1.435+00	1.736+00	2.044+00		
16.48	1.212–02	9.610–02	1.962–01	4.489–01	6.630–01	1.126+00	1.364+00	1.607+00		
20.87	9.372–03	7.361–02	1.509–01	3.490–01	5.173–01	8.823–01	1.070+00	1.262+00		
26.43	7.307–03	5.623–02	1.157–01	2.705–01	4.026–01	6.903–01	8.385–01	9.900–01		
33.46	5.745–03	4.287–02	8.835–02	2.090–01	3.125–01	5.389–01	6.560–01	7.756–01		
42.36	4.553–03	3.262–02	6.718–02	1.608–01	2.417–01	4.199–01	5.122–01	6.066–01		
53.64	3.634–03	2.478–02	5.089–02	1.233–01	1.862–01	3.262–01	3.991–01	4.735–01		
67.92	2.914–03	1.879–02	3.840–02	9.416–02	1.430–01	2.527–01	3.101–01	3.689–01		
86.00	2.344–03	1.424–02	2.888–02	7.158–02	1.093–01	1.951–01	2.404–01	2.867–01		
108.89	1.878–03	1.078–02	2.164–02	5.417–02	8.313–02	1.502–01	1.858–01	2.223–01		
137.87	1.490–03	8.144–03	1.617–02	4.080–02	6.295–02	1.151–01	1.432–01	1.719–01		
174.56	1.170–03	6.144–03	1.204–02	3.058–02	4.743–02	8.794–02	1.100–01	1.326–01		
221.03	9.040–04	4.622–03	8.943–03	2.281–02	3.556–02	6.689–02	8.427–02	1.020–01		
279.86	6.893–04	3.466–03	6.623–03	1.692–02	2.651–02	5.069–02	6.432–02	7.829–02		
354.35	5.170–04	2.590–03	4.892–03	1.249–02	1.967–02	3.825–02	4.895–02	5.990–02		
448.67	3.830–04	1.926–03	3.602–03	9.157–03	1.451–02	2.873–02	3.713–02	4.572–02		
568.10	2.809–04	1.422–03	2.643–03	6.670–03	1.064–02	2.149–02	2.807–02	3.480–02		

**Table 1** (continued)

Xe	$\sigma_{\text{tot}}^{\text{tot}}, \text{Mb}$	Xe <sup>8+</sup>	Xe <sup>18+</sup>	Xe <sup>26+</sup>	Xe <sup>36+</sup>	Xe <sup>44+</sup>	Xe <sup>52+</sup>	Xe <sup>53+</sup>	Xe <sup>54+</sup>
$E_k, \text{eV}$									
719.31	2.044–04	1.037–03	1.934–03	4.824–03	7.761–03	1.601–02	2.115–02	2.643–02	
910.77	1.481–04	7.490–04	1.413–03	3.460–03	5.626–03	1.186–02	1.589–02	2.001–02	
1153.20	1.067–04	5.350–04	1.019–03	2.460–03	4.052–03	8.751–03	1.189–02	1.511–02	
1460.15	7.652–05	3.773–04	7.329–04	1.736–03	2.900–03	6.421–03	8.873–03	1.139–02	
1848.80	5.456–05	2.626–04	5.229–04	1.212–03	2.062–03	4.686–03	6.596–03	8.553–03	
2340.91	3.867–05	1.804–04	3.703–04	8.346–04	1.459–03	3.401–03	4.886–03	6.407–03	
2964.00	2.724–05	1.223–04	2.598–04	5.690–04	1.023–03	2.454–03	3.606–03	4.786–03	
3752.94	1.905–05	8.192–05	1.807–04	3.831–04	7.110–04	1.760–03	2.653–03	3.566–03	
4751.87	1.323–05	5.424–05	1.245–04	2.554–04	4.906–04	1.251–03	1.939–03	2.645–03	
6016.70	9.118–06	3.553–05	8.489–05	1.685–04	3.358–04	8.825–04	1.412–03	1.954–03	
7618.19	6.229–06	2.308–05	5.737–05	1.102–04	2.282–04	6.169–04	1.022–03	1.436–03	
9645.96	4.219–06	1.489–05	3.842–05	7.154–05	1.539–04	4.276–04	7.354–04	1.051–03	
12213.47	2.834–06	9.559–06	2.553–05	4.619–05	1.031–04	2.937–04	5.265–04	7.654–04	
15464.38	1.889–06	6.119–06	1.684–05	2.969–05	6.849–05	1.999–04	3.745–04	5.537–04	
19580.60	1.250–06	3.910–06	1.104–05	1.902–05	4.521–05	1.349–04	2.645–04	3.977–04	
24792.45	8.212–07	2.494–06	7.187–06	1.215–05	2.963–05	9.009–05	1.854–04	2.833–04	
31391.56	5.359–07	1.588–06	4.650–06	7.735–06	1.927–05	5.963–05	1.288–04	1.999–04	
39747.19	3.472–07	1.008–06	2.989–06	4.907–06	1.243–05	3.910–05	8.862–05	1.396–04	
50326.87	2.233–07	6.375–07	1.909–06	3.102–06	7.964–06	2.541–05	6.033–05	9.629–05	

**Table 2**

Fit parameters for photoionization cross sections. See page 991 for Explanation of Tables.

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
<b>Si<sup>3+</sup></b>								
3s <sub>1/2</sub>	4.476+01	1.551+04	1.165+00	5.730–06	1.995+01	2.580+01	1.702+02	3.6
4s <sub>1/2</sub>	2.097+01	9.667+03	2.005–01	4.567–07	1.394+01	3.063+02	7.204+02	4.3
5s <sub>1/2</sub>	1.218+01	6.029+03	6.403–01	4.982+01	4.111+00	5.400+03	1.078–03	3.7
6s <sub>1/2</sub>	7.958+00	4.760+03	1.347+00	1.835+01	3.666+00	6.500+03	6.167–01	4.5
7s <sub>1/2</sub>	5.606+00	3.759+03	8.914–01	2.578+01	3.537+00	1.918+04	3.262–05	5.1
8s <sub>1/2</sub>	4.162+00	3.757+03	6.866–01	2.681+01	3.546+00	1.918+04	1.341+00	4.5
9s <sub>1/2</sub>	3.212+00	2.967+03	4.397–01	4.516+01	3.439+00	8.321+04	0.000+00	5.8
10s <sub>1/2</sub>	2.553+00	2.967+03	2.580–01	7.781+01	3.483+00	8.321+04	0.000+00	4.3
11s <sub>1/2</sub>	2.079+00	2.966+03	1.899–01	1.038+02	3.458+00	1.323+05	1.236+00	4.5
12s <sub>1/2</sub>	1.725+00	2.343+03	2.150–01	6.708+01	3.437+00	1.323+05	2.744+00	4.9
3p <sub>1/2</sub>	3.599+01	4.788+03	1.699+01	1.362+01	6.640+00	3.773+01	3.044–01	1.1
4p <sub>1/2</sub>	1.797+01	3.771+03	8.316+00	7.995+00	6.914+00	7.271+01	7.612–01	1.1
5p <sub>1/2</sub>	1.081+01	2.975+03	4.093+00	6.065+00	7.124+00	1.370+02	1.377+00	0.8
6p <sub>1/2</sub>	7.219+00	2.348+03	1.738+00	5.946+00	7.271+00	3.039+02	2.925+00	0.7
7p <sub>1/2</sub>	5.163+00	2.346+03	2.291–01	1.571+01	7.389+00	2.185+03	2.029+01	0.7
8p <sub>1/2</sub>	3.876+00	1.853+03	3.064–01	1.498+01	7.022+00	2.171+03	1.310+01	1.3
9p <sub>1/2</sub>	3.016+00	1.852+03	2.682–02	1.791+02	6.861+00	2.890+04	1.303+02	2.8
10p <sub>1/2</sub>	2.414+00	1.851+03	5.000–02	1.225+02	6.618+00	2.000+04	5.967+01	5.1
11p <sub>1/2</sub>	1.976+00	1.462+03	3.204–01	1.558+01	6.375+00	3.924+03	8.280+00	5.5
12p <sub>1/2</sub>	1.647+00	1.462+03	3.443–01	1.294+01	6.282+00	3.923+03	7.049+00	6.6
3p <sub>3/2</sub>	3.593+01	4.788+03	1.670+01	1.401+01	6.661+00	3.738+01	2.936–01	1.1
4p <sub>3/2</sub>	1.795+01	3.771+03	8.185+00	8.200+00	6.922+00	7.264+01	7.648–01	1.1
5p <sub>3/2</sub>	1.080+01	2.975+03	4.023+00	6.251+00	7.122+00	1.379+02	1.384+00	0.9
6p <sub>3/2</sub>	7.214+00	2.348+03	1.685+00	6.225+00	7.264+00	3.112+02	2.959+00	0.7
7p <sub>3/2</sub>	5.160+00	2.346+03	4.065–01	1.151+01	7.307+00	1.282+03	1.117+01	0.7
8p <sub>3/2</sub>	3.874+00	1.853+03	5.458–01	1.007+01	6.927+00	1.280+03	7.131+00	1.7
9p <sub>3/2</sub>	3.015+00	1.852+03	3.230–02	1.510+02	6.859+00	2.361+04	1.060+02	2.5
10p <sub>3/2</sub>	2.413+00	1.851+03	4.957–02	1.286+02	6.609+00	2.001+04	5.916+01	4.7
11p <sub>3/2</sub>	1.975+00	1.462+03	3.132–01	1.661+01	6.359+00	4.036+03	8.313+00	5.1
12p <sub>3/2</sub>	1.647+00	1.462+03	3.416–01	1.347+01	6.268+00	4.035+03	6.993+00	6.9
3d <sub>3/2</sub>	2.503+01	9.358+02	3.055+00	1.468+03	4.876+00	2.000+03	2.382+00	3.1
4d <sub>3/2</sub>	1.405+01	7.334+02	3.332+00	3.730+02	5.264+00	1.162+03	7.536–01	1.5
5d <sub>3/2</sub>	8.953+00	5.770+02	3.657+00	1.349+02	5.341+00	1.162+03	8.089–01	0.6
6d <sub>3/2</sub>	6.194+00	4.549+02	3.117+00	1.009+02	5.514+00	1.163+03	8.190–01	1.1
7d <sub>3/2</sub>	4.537+00	3.589+02	2.525+00	9.130+01	5.703+00	1.163+03	8.554–01	2.1
8d <sub>3/2</sub>	3.465+00	3.578+02	7.163–01	4.736+02	6.794+00	8.007+02	1.165+00	2.9
9d <sub>3/2</sub>	2.733+00	2.826+02	6.063–01	4.117+02	6.933+00	8.006+02	1.461+00	2.6
10d <sub>3/2</sub>	2.210+00	2.821+02	7.413–01	2.220+02	6.787+00	7.990+02	1.457+00	2.5
11d <sub>3/2</sub>	1.824+00	2.228+02	6.876–01	1.848+02	6.846+00	7.990+02	1.549+00	2.3
12d <sub>3/2</sub>	1.531+00	2.814+02	7.445–01	1.318+02	6.681+00	1.000+03	1.401+00	7.8
3d <sub>5/2</sub>	2.503+01	9.358+02	3.045+00	1.498+03	4.870+00	2.000+03	2.325+00	3.2
4d <sub>5/2</sub>	1.405+01	7.334+02	3.463+00	3.414+02	5.242+00	1.162+03	7.937–01	1.5
5d <sub>5/2</sub>	8.953+00	5.770+02	3.618+00	1.384+02	5.344+00	1.163+03	8.014–01	0.6
6d <sub>5/2</sub>	6.194+00	4.549+02	3.115+00	1.012+02	5.513+00	1.164+03	8.186–01	1.2
7d <sub>5/2</sub>	4.537+00	3.589+02	2.514+00	9.223+01	5.705+00	1.164+03	8.552–01	2.2
8d <sub>5/2</sub>	3.465+00	3.578+02	7.009–01	4.874+02	6.813+00	7.986+02	1.209+00	3.0
9d <sub>5/2</sub>	2.733+00	2.826+02	6.036–01	4.146+02	6.937+00	7.986+02	1.472+00	2.6
10d <sub>5/2</sub>	2.210+00	2.821+02	7.543–01	2.169+02	6.773+00	7.987+02	1.443+00	2.6
11d <sub>5/2</sub>	1.824+00	2.228+02	6.661–01	1.939+02	6.869+00	7.988+02	1.582+00	2.2
12d <sub>5/2</sub>	1.531+00	2.226+02	5.915–01	1.871+02	6.835+00	1.002+03	1.598+00	6.5
4f <sub>5/2</sub>	1.361+01	2.346+02	5.547+00	1.853+02	4.101+00	1.177+03	6.870–01	1.2
5f <sub>5/2</sub>	8.713+00	1.833+02	4.423+00	1.838+02	5.540+00	1.210+02	6.549–01	1.1
6f <sub>5/2</sub>	6.051+00	1.806+02	2.890+00	3.252+02	7.159+00	5.251+01	7.673–01	1.9
7f <sub>5/2</sub>	4.446+00	1.423+02	1.729+00	5.624+02	8.488+00	4.552+01	9.762–01	1.3
8f <sub>5/2</sub>	3.403+00	1.413+02	1.360+00	5.217+02	9.099+00	4.541+01	1.159+00	1.6
9f <sub>5/2</sub>	2.689+00	1.116+02	8.643–01	6.301+02	9.707+00	5.779+01	1.538+00	0.9
10f <sub>5/2</sub>	2.178+00	1.111+02	6.097–01	6.536+02	9.951+00	7.752+01	1.892+00	0.9
11f <sub>5/2</sub>	1.800+00	1.107+02	6.433–01	4.579+02	9.856+00	7.758+01	1.774+00	0.6
12f <sub>5/2</sub>	1.513+00	8.751+01	6.536–01	3.433+02	9.836+00	7.741+01	1.720+00	1.1
4f <sub>7/2</sub>	1.361+01	2.346+02	5.567+00	1.829+02	4.099+00	1.178+03	6.883–01	1.2
5f <sub>7/2</sub>	8.713+00	1.833+02	4.424+00	1.837+02	5.538+00	1.211+02	6.548–01	1.1
6f <sub>7/2</sub>	6.051+00	1.806+02	2.876+00	3.288+02	7.167+00	5.253+01	7.677–01	1.9
7f <sub>7/2</sub>	4.445+00	1.423+02	1.708+00	5.758+02	8.517+00	4.541+01	9.831–01	1.3
8f <sub>7/2</sub>	3.403+00	1.413+02	1.358+00	5.242+02	9.119+00	4.496+01	1.165+00	1.6
9f <sub>7/2</sub>	2.689+00	1.116+02	5.880–01	9.476+02	1.008+01	7.393+01	2.015+00	1.0
10f <sub>7/2</sub>	2.178+00	1.111+02	5.290–01	7.526+02	1.008+01	8.520+01	2.111+00	0.9
11f <sub>7/2</sub>	1.800+00	1.107+02	5.869–01	5.085+02	9.880+00	8.518+01	1.861+00	0.7
12f <sub>7/2</sub>	1.512+00	8.751+01	5.956–01	3.789+02	9.871+00	8.493+01	1.826+00	0.8
5g <sub>7/2</sub>	8.708+00	1.176+02	2.488+00	2.647+03	8.653+00	1.624+01	1.051+00	0.3
6g <sub>7/2</sub>	6.047+00	9.204+01	1.423+00	7.383+03	1.140+01	1.448+01	1.192+00	0.1
7g <sub>7/2</sub>	4.443+00	9.044+01	1.075+00	6.332+03	1.276+01	1.515+01	1.463+00	0.1
8g <sub>7/2</sub>	3.402+00	7.132+01	7.396–01	4.662+03	1.351+01	2.013+01	1.909+00	0.3
9g <sub>7/2</sub>	2.688+00	7.061+01	6.511–01	2.967+03	1.356+01	2.398+01	2.026+00	0.5

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
10g <sub>7/2</sub>	2.177+00	7.009+01	5.086–01	2.122+03	1.366+01	3.157+01	2.352+00	0.8
11g <sub>7/2</sub>	1.799+00	6.972+01	4.266–01	1.563+03	1.373+01	3.833+01	2.644+00	0.9
12g <sub>7/2</sub>	1.512+00	5.515+01	4.839–01	1.108+03	1.338+01	3.811+01	2.210+00	1.0
5g <sub>9/2</sub>	8.708+00	1.176+02	2.268+00	3.929+03	9.172+00	1.440+01	1.187+00	0.6
6g <sub>9/2</sub>	6.047+00	9.204+01	1.115+00	1.096+04	1.184+01	1.656+01	1.331+00	0.1
7g <sub>9/2</sub>	4.443+00	9.044+01	8.369–01	7.975+03	1.324+01	1.749+01	1.777+00	0.2
8g <sub>9/2</sub>	3.402+00	7.132+01	8.181–01	4.410+03	1.336+01	1.878+01	1.762+00	0.3
9g <sub>9/2</sub>	2.688+00	7.061+01	5.143–01	3.193+03	1.385+01	2.857+01	2.482+00	0.5
10g <sub>9/2</sub>	2.177+00	7.009+01	5.901–01	2.019+03	1.350+01	2.815+01	2.077+00	0.8
11g <sub>9/2</sub>	1.799+00	6.972+01	6.533–01	1.350+03	1.326+01	2.769+01	1.825+00	0.9
12g <sub>9/2</sub>	1.512+00	5.515+01	6.729–01	9.947+02	1.321+01	2.751+01	1.730+00	1.0
6h <sub>9/2</sub>	6.047+00	5.969+01	1.617+00	7.002+03	1.084+01	1.507+01	1.017+00	0.4
7h <sub>9/2</sub>	4.443+00	5.808+01	2.091+00	2.275+03	1.101+01	1.340+01	7.508–01	1.1
8h <sub>9/2</sub>	3.401+00	5.704+01	8.134–01	1.883+04	1.540+01	1.292+01	1.530+00	0.3
9h <sub>9/2</sub>	2.688+00	4.505+01	8.865–01	9.583+03	1.517+01	1.346+01	1.335+00	0.5
10h <sub>9/2</sub>	2.177+00	4.454+01	7.830–01	7.455+03	1.576+01	1.410+01	1.496+00	0.5
11h <sub>9/2</sub>	1.799+00	4.416+01	5.530–01	5.209+03	1.609+01	2.006+01	1.852+00	0.7
12h <sub>9/2</sub>	1.512+00	4.388+01	5.689–01	3.677+03	1.607+01	2.008+01	1.783+00	0.8
6h <sub>11/2</sub>	6.047+00	5.969+01	1.154+00	2.154+04	1.213+01	1.448+01	1.443+00	0.1
7h <sub>11/2</sub>	4.443+00	5.808+01	6.531–01	3.869+04	1.499+01	1.593+01	1.775+00	0.1
8h <sub>11/2</sub>	3.401+00	5.704+01	6.223–01	2.249+04	1.593+01	1.536+01	1.894+00	0.2
9h <sub>11/2</sub>	2.688+00	4.505+01	6.343–01	1.317+04	1.617+01	1.541+01	1.849+00	0.3
10h <sub>11/2</sub>	2.177+00	4.454+01	6.510–01	7.999+03	1.610+01	1.607+01	1.741+00	0.4
11h <sub>11/2</sub>	1.799+00	4.416+01	6.008–01	5.177+03	1.602+01	1.858+01	1.755+00	0.7
12h <sub>11/2</sub>	1.512+00	4.388+01	5.296–01	3.666+03	1.609+01	2.164+01	1.864+00	0.9
7i <sub>11/2</sub>	4.443+00	3.790+01	1.497+00	5.533+03	1.206+01	1.432+01	8.546–01	0.7
8i <sub>11/2</sub>	3.401+00	3.686+01	8.760–01	4.553+04	1.625+01	1.048+01	1.296+00	0.1
9i <sub>11/2</sub>	2.688+00	3.615+01	9.382–01	2.532+04	1.641+01	1.060+01	1.103+00	0.4
10i <sub>11/2</sub>	2.177+00	3.564+01	8.138–01	2.217+04	1.721+01	1.133+01	1.186+00	0.5
11i <sub>11/2</sub>	1.799+00	3.526+01	8.340–01	1.490+04	1.732+01	1.138+01	1.144+00	0.7
12i <sub>11/2</sub>	1.512+00	2.794+01	4.280–01	1.517+04	1.933+01	1.656+01	2.142+00	0.3
7i <sub>13/2</sub>	4.443+00	3.790+01	1.497+00	5.532+03	1.206+01	1.432+01	8.546–01	0.7
8i <sub>13/2</sub>	3.401+00	3.686+01	8.131–01	5.117+04	1.642+01	1.097+01	1.357+00	0.1
9i <sub>13/2</sub>	2.688+00	3.615+01	8.584–01	3.001+04	1.671+01	1.096+01	1.177+00	0.5
10i <sub>13/2</sub>	2.177+00	3.564+01	8.164–01	2.060+04	1.704+01	1.172+01	1.152+00	0.7
11i <sub>13/2</sub>	1.799+00	3.526+01	5.848–01	2.000+04	1.827+01	1.392+01	1.528+00	0.7
12i <sub>13/2</sub>	1.512+00	2.794+01	5.888–01	1.375+04	1.836+01	1.415+01	1.522+00	0.5
Si <sup>11+</sup>								
2s <sub>1/2</sub>	5.234+02	5.085+04	9.114–02	2.014+03	5.405+00	9.600+03	2.170+01	0.5
3s <sub>1/2</sub>	2.272+02	2.502+04	2.113–01	1.032+04	4.162+00	9.599+03	2.248+01	0.2
4s <sub>1/2</sub>	1.264+02	1.559+04	3.526–01	7.712+03	3.675+00	9.599+03	2.281+01	0.7
5s <sub>1/2</sub>	8.037+01	1.229+04	4.804–01	4.184+03	3.449+00	9.598+03	2.343+01	1.0
6s <sub>1/2</sub>	5.558+01	9.702+03	6.321–01	2.169+03	3.290+00	9.596+03	1.562+01	1.2
7s <sub>1/2</sub>	4.071+01	7.659+03	8.516–01	1.050+03	3.156+00	9.594+03	9.565+00	1.4
8s <sub>1/2</sub>	3.110+01	6.048+03	1.175+00	4.744+02	3.041+00	9.592+03	6.090+00	1.6
9s <sub>1/2</sub>	2.453+01	4.776+03	1.712–01	1.606+04	3.013+00	7.640+04	2.380+01	1.5
10s <sub>1/2</sub>	1.984+01	3.773+03	2.503–01	6.737+03	2.931+00	7.640+04	1.249+01	1.6
11s <sub>1/2</sub>	1.638+01	3.769+03	3.172–01	3.532+03	2.881+00	7.639+04	9.016+00	1.9
12s <sub>1/2</sub>	1.375+01	2.978+03	4.850–01	1.301+03	2.818+00	7.639+04	5.636+00	1.9
2p <sub>1/2</sub>	4.995+02	1.596+04	2.553+01	7.271+02	4.059+00	1.048+02	1.781+00	0.2
3p <sub>1/2</sub>	2.206+02	9.867+03	3.478+01	4.735+01	5.094+00	4.439+01	1.146+00	0.1
4p <sub>1/2</sub>	1.237+02	7.742+03	1.892+01	3.878+01	5.697+00	6.143+01	1.868+00	0.4
5p <sub>1/2</sub>	7.901+01	6.096+03	5.648+00	9.790+01	5.889+00	2.038+02	3.568+00	0.2
6p <sub>1/2</sub>	5.479+01	4.807+03	7.315+00	4.768+01	5.562+00	2.054+02	2.562+00	0.7
7p <sub>1/2</sub>	4.022+01	3.793+03	1.817+00	2.589+02	5.649+00	8.284+02	6.333+00	0.9
8p <sub>1/2</sub>	3.077+01	2.995+03	2.311+00	1.514+02	5.422+00	8.295+02	4.223+00	1.3
9p <sub>1/2</sub>	2.430+01	2.365+03	3.034+00	8.310+01	5.198+00	8.285+02	2.873+00	1.7
10p <sub>1/2</sub>	1.967+01	2.361+03	3.313+00	5.898+01	5.091+00	8.289+02	2.358+00	2.2
11p <sub>1/2</sub>	1.625+01	1.865+03	8.673–02	2.774+04	5.289+00	2.801+04	4.691+01	1.3
12p <sub>1/2</sub>	1.365+01	1.862+03	1.219–01	1.667+04	5.121+00	2.800+04	2.321+01	3.1
2p <sub>3/2</sub>	4.984+02	1.596+04	2.239+01	9.472+02	4.161+00	1.050+02	1.900+00	0.1
3p <sub>3/2</sub>	2.203+02	9.866+03	9.606+00	2.455+02	6.029+00	9.194+01	5.829–02	0.5
4p <sub>3/2</sub>	1.236+02	7.742+03	1.048+01	8.177+01	5.932+00	9.799+01	2.449+00	0.1
5p <sub>3/2</sub>	7.894+01	4.831+03	1.258+01	3.580+01	5.601+00	1.063+02	2.083+00	0.4
6p <sub>3/2</sub>	5.475+01	4.807+03	3.658+00	1.210+02	5.763+00	3.538+02	4.341+00	0.6
7p <sub>3/2</sub>	4.019+01	3.793+03	4.809+00	6.359+01	5.467+00	3.522+02	2.924+00	1.1
8p <sub>3/2</sub>	3.075+01	2.995+03	1.355+00	3.506+02	5.491+00	1.315+03	6.506+00	1.3
9p <sub>3/2</sub>	2.429+01	2.365+03	1.734+00	2.050+02	5.294+00	1.314+03	4.355+00	1.7
10p <sub>3/2</sub>	1.967+01	2.361+03	2.144+00	1.235+02	5.131+00	1.312+03	3.132+00	2.2
11p <sub>3/2</sub>	1.625+01	1.865+03	8.464–02	2.944+04	5.288+00	2.801+04	4.690+01	1.5
12p <sub>3/2</sub>	1.365+01	1.862+03	1.336–01	1.506+04	5.086+00	2.795+04	2.034+01	2.0
3d <sub>3/2</sub>	2.179+02	3.971+03	1.084+01	3.171+03	6.075+00	6.801+01	4.056–01	0.3
4d <sub>3/2</sub>	1.226+02	3.087+03	4.915+00	8.838+02	8.495+00	6.651+01	5.890–01	0.4

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
5d <sub>3/2</sub>	7.844+01	2.419+03	4.524+00	2.888+02	8.917+00	6.965+01	3.767+00	0.1
6d <sub>3/2</sub>	5.447+01	2.395+03	5.311+00	1.382+02	8.678+00	6.948+01	3.200+00	0.3
7d <sub>3/2</sub>	4.001+01	1.889+03	7.039+00	7.185+01	8.158+00	6.867+01	2.168+00	0.8
8d <sub>3/2</sub>	3.063+01	1.491+03	1.467+00	2.066+02	8.427+00	3.182+02	6.879+00	1.0
9d <sub>3/2</sub>	2.420+01	1.484+03	1.810+00	1.836+02	8.109+00	3.137+02	4.676+00	1.6
10d <sub>3/2</sub>	1.960+01	1.173+03	2.454+00	1.171+02	7.696+00	3.101+02	2.878+00	2.1
11d <sub>3/2</sub>	1.620+01	1.169+03	2.885+00	8.071+01	7.461+00	3.113+02	2.222+00	2.6
12d <sub>3/2</sub>	1.361+01	9.244+02	2.679–01	2.215+03	7.695+00	3.179+03	1.457+01	2.3
3d <sub>5/2</sub>	2.178+02	3.971+03	1.034+01	3.473+03	6.139+00	6.807+01	1.618–01	0.3
4d <sub>5/2</sub>	1.225+02	3.087+03	4.911+00	8.838+02	8.511+00	6.575+01	4.928–01	0.3
5d <sub>5/2</sub>	7.842+01	2.419+03	3.139+00	3.739+02	9.055+00	9.558+01	5.082+00	0.1
6d <sub>5/2</sub>	5.445+01	2.395+03	3.687+00	1.828+02	8.850+00	9.383+01	4.356+00	0.3
7d <sub>5/2</sub>	4.000+01	1.889+03	4.667+00	1.048+02	8.414+00	9.335+01	3.034+00	0.7
8d <sub>5/2</sub>	3.063+01	1.491+03	2.550+00	1.467+02	8.303+00	1.921+02	4.221+00	1.0
9d <sub>5/2</sub>	2.420+01	1.484+03	3.249+00	9.479+01	7.922+00	1.901+02	2.849+00	1.7
10d <sub>5/2</sub>	1.960+01	1.173+03	4.097+00	6.100+01	7.555+00	1.900+02	1.979+00	2.0
11d <sub>5/2</sub>	1.620+01	1.169+03	3.327+00	6.561+01	7.469+00	2.573+02	2.054+00	2.4
12d <sub>5/2</sub>	1.361+01	9.244+02	2.722–01	2.109+03	7.710+00	3.072+03	1.474+01	2.5
4f <sub>5/2</sub>	1.225+02	1.583+03	8.111+00	4.367+03	8.404+00	3.973+01	1.398+00	0.1
5f <sub>5/2</sub>	7.839+01	1.539+03	1.742+01	3.729+02	9.535+00	1.478+01	1.255+00	0.1
6f <sub>5/2</sub>	5.444+01	1.208+03	8.289+00	3.874+02	1.109+01	2.270+01	2.013+00	0.2
7f <sub>5/2</sub>	3.999+01	1.193+03	5.995+00	2.449+02	1.119+01	3.357+01	2.311+00	0.5
8f <sub>5/2</sub>	3.062+01	9.414+02	4.660+00	1.776+02	1.100+01	4.940+01	2.460+00	0.8
9f <sub>5/2</sub>	2.419+01	9.350+02	4.057+00	1.397+02	1.071+01	6.613+01	2.354+00	1.3
10f <sub>5/2</sub>	1.960+01	7.389+02	4.354+00	1.035+02	1.022+01	7.774+01	1.847+00	1.6
11f <sub>5/2</sub>	1.620+01	7.355+02	3.195+00	1.074+02	1.015+01	1.161+02	2.116+00	2.1
12f <sub>5/2</sub>	1.361+01	7.329+02	6.507–01	4.046+02	1.053+01	5.170+02	7.842+00	2.4
4f <sub>7/2</sub>	1.225+02	1.583+03	8.132+00	4.387+03	8.400+00	3.950+01	1.203+00	0.1
5f <sub>7/2</sub>	7.838+01	1.539+03	4.428+00	1.548+03	1.102+01	3.921+01	2.554+00	0.0
6f <sub>7/2</sub>	5.443+01	1.208+03	4.226+00	5.402+02	1.161+01	3.940+01	3.334+00	0.1
7f <sub>7/2</sub>	3.999+01	1.193+03	4.845+00	2.700+02	1.140+01	3.922+01	2.795+00	0.4
8f <sub>7/2</sub>	3.062+01	9.414+02	1.221+00	3.195+02	1.166+01	1.569+02	8.519+00	0.6
9f <sub>7/2</sub>	2.419+01	9.350+02	1.431+00	2.575+02	1.125+01	1.590+02	6.108+00	1.1
10f <sub>7/2</sub>	1.960+01	7.389+02	1.850+00	2.039+02	1.070+01	1.578+02	3.850+00	1.6
11f <sub>7/2</sub>	1.619+01	7.355+02	2.219+00	1.483+02	1.035+01	1.558+02	2.868+00	2.2
12f <sub>7/2</sub>	1.361+01	7.329+02	6.524–01	4.070+02	1.052+01	5.167+02	7.771+00	2.4
5g <sub>7/2</sub>	7.838+01	9.892+02	1.819+01	6.226+02	9.394+00	1.491+01	1.206+00	0.1
6g <sub>7/2</sub>	5.443+01	7.737+02	9.134+00	1.511+03	1.232+01	1.581+01	1.508+00	0.1
7g <sub>7/2</sub>	3.999+01	7.593+02	7.677+00	8.989+02	1.318+01	1.725+01	1.654+00	0.2
8g <sub>7/2</sub>	3.062+01	5.987+02	5.742+00	5.608+02	1.347+01	2.369+01	1.889+00	0.4
9g <sub>7/2</sub>	2.419+01	5.923+02	4.250+00	3.822+02	1.353+01	3.399+01	2.166+00	0.7
10g <sub>7/2</sub>	1.960+01	4.683+02	3.063+00	2.985+02	1.332+01	5.371+01	2.440+00	1.0
11g <sub>7/2</sub>	1.619+01	4.649+02	2.474–01	6.148+02	1.386+01	6.136+02	2.335+01	1.2
12g <sub>7/2</sub>	1.361+01	4.623+02	2.751–01	5.854+02	1.362+01	6.090+02	1.900+01	1.6
5g <sub>9/2</sub>	7.838+01	9.891+02	1.814+01	6.277+02	9.400+00	1.491+01	1.211+00	0.1
6g <sub>9/2</sub>	5.443+01	7.737+02	1.287+01	9.060+02	1.164+01	1.316+01	1.221+00	0.1
7g <sub>9/2</sub>	3.999+01	7.593+02	8.914+00	8.155+02	1.300+01	1.529+01	1.507+00	0.2
8g <sub>9/2</sub>	3.062+01	5.987+02	5.256+00	5.818+02	1.358+01	2.529+01	2.031+00	0.4
9g <sub>9/2</sub>	2.419+01	5.923+02	3.994+00	3.900+02	1.360+01	3.563+01	2.286+00	0.7
10g <sub>9/2</sub>	1.959+01	4.683+02	2.932+00	3.027+02	1.338+01	5.512+01	2.540+00	1.0
11g <sub>9/2</sub>	1.619+01	4.649+02	2.531–01	6.649+02	1.379+01	6.127+02	2.204+01	1.4
12g <sub>9/2</sub>	1.361+01	4.623+02	2.689–01	5.523+02	1.367+01	6.118+02	2.018+01	1.5
6h <sub>9/2</sub>	5.443+01	5.031+02	1.515+01	8.084+02	1.118+01	1.272+01	1.094+00	0.1
7h <sub>9/2</sub>	3.999+01	4.887+02	7.536+00	3.152+03	1.438+01	1.408+01	1.424+00	0.1
8h <sub>9/2</sub>	3.062+01	3.850+02	7.468+00	1.853+03	1.501+01	1.388+01	1.356+00	0.2
9h <sub>9/2</sub>	2.419+01	3.785+02	3.783+00	1.469+03	1.630+01	2.334+01	2.210+00	0.3
10h <sub>9/2</sub>	1.959+01	3.739+02	3.488+00	8.929+02	1.606+01	2.846+01	2.092+00	0.6
11h <sub>9/2</sub>	1.619+01	2.961+02	2.891+00	6.068+02	1.584+01	3.850+01	2.168+00	0.8
12h <sub>9/2</sub>	1.361+01	2.935+02	3.457+00	4.225+02	1.534+01	3.725+01	1.673+00	1.1
6h <sub>11/2</sub>	5.443+01	5.031+02	1.477+01	8.769+02	1.125+01	1.279+01	1.115+00	0.1
7h <sub>11/2</sub>	3.999+01	4.887+02	1.557+01	5.167+02	1.183+01	1.270+01	8.256–01	0.5
8h <sub>11/2</sub>	3.062+01	3.850+02	6.082+00	2.180+03	1.538+01	1.596+01	1.571+00	0.2
9h <sub>11/2</sub>	2.419+01	3.785+02	4.878+00	1.380+03	1.584+01	1.976+01	1.746+00	0.4
10h <sub>11/2</sub>	1.959+01	3.739+02	3.499+00	8.942+02	1.607+01	2.828+01	2.093+00	0.6
11h <sub>11/2</sub>	1.619+01	2.961+02	3.105+00	6.008+02	1.575+01	3.654+01	2.026+00	0.8
12h <sub>11/2</sub>	1.361+01	2.935+02	3.204+00	4.272+02	1.539+01	4.018+01	1.790+00	1.2
7i <sub>11/2</sub>	3.999+01	3.199+02	8.781+00	2.716+03	1.335+01	1.581+01	1.053+00	0.3
8i <sub>11/2</sub>	3.062+01	3.105+02	7.473+00	4.833+03	1.603+01	1.170+01	1.219+00	0.1
9i <sub>11/2</sub>	2.419+01	3.041+02	5.956+00	4.650+03	1.737+01	1.271+01	1.345+00	0.2
10i <sub>11/2</sub>	1.959+01	2.406+02	5.110+00	3.107+03	1.781+01	1.491+01	1.395+00	0.3
11i <sub>11/2</sub>	1.619+01	2.372+02	3.228+00	2.097+03	1.848+01	2.270+01	1.885+00	0.5
12i <sub>11/2</sub>	1.361+01	2.346+02	2.289+00	1.318+03	1.864+01	3.304+01	2.349+00	0.8
7i <sub>13/2</sub>	3.999+01	3.199+02	1.529+01	3.685+02	1.162+01	1.426+01	8.086–01	0.3
8i <sub>13/2</sub>	3.061+01	3.105+02	7.589+00	4.589+03	1.592+01	1.179+01	1.171+00	0.1
9i <sub>13/2</sub>	2.419+01	3.041+02	5.217+00	6.008+03	1.812+01	1.260+01	1.633+00	0.2

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$10i_{13/2}$	1.959+01	2.406+02	5.028+00	3.234+03	1.793+01	1.478+01	1.433+00	0.3
$11i_{13/2}$	1.619+01	2.372+02	3.020+00	2.089+03	1.859+01	2.383+01	2.007+00	0.5
$12i_{13/2}$	1.361+01	2.346+02	3.206+00	1.360+03	1.816+01	2.553+01	1.721+00	0.8
Si <sup>12+</sup>								
$1s_{1/2}$	2.439+03	5.277+04	6.832+01	2.496+02	3.835+00	2.239+01	4.795+00	0.3
$2s_{1/2}$	5.944+02	5.092+04	1.038+02	9.180+00	3.893+00	1.880+01	1.520+00	0.3
$3s_{1/2}$	2.611+02	3.165+04	1.075+00	1.273+03	4.146+00	1.865+03	2.862+01	0.3
$4s_{1/2}$	1.461+02	1.973+04	1.682+00	6.835+02	3.691+00	1.876+03	1.557+01	0.7
$5s_{1/2}$	9.318+01	1.231+04	2.557+00	2.942+02	3.390+00	1.865+03	7.835+00	0.9
$6s_{1/2}$	6.457+01	9.711+03	3.710+00	1.210+02	3.177+00	1.869+03	4.627+00	1.2
$7s_{1/2}$	4.736+01	7.666+03	5.183+00	5.113+01	3.014+00	1.868+03	3.102+00	1.4
$8s_{1/2}$	3.622+01	6.053+03	4.271+02	4.762+05	2.995+00	3.007+05	4.011+01	1.9
$9s_{1/2}$	2.859+01	4.780+03	5.481+02	2.486+05	2.935+00	3.007+05	4.040+01	1.8
$10s_{1/2}$	2.315+01	4.775+03	5.474+02	1.910+05	2.924+00	3.007+05	6.326+01	1.7
$11s_{1/2}$	1.912+01	3.772+03	7.640+02	8.726+04	2.864+00	3.007+05	3.431+01	1.6
$12s_{1/2}$	1.606+01	2.980+03	1.114+01	3.571+04	2.812+00	3.007+05	1.845+01	1.6
$2p_{1/2}$	5.815+02	1.605+04	2.036+01	1.483+03	4.255+00	1.070+02	7.240+02	0.2
$3p_{1/2}$	2.575+02	1.247+04	7.026+00	3.381+02	6.360+00	1.128+02	1.037+01	0.5
$4p_{1/2}$	1.446+02	7.763+03	8.540+00	1.023+02	6.216+00	1.099+02	3.372+00	0.1
$5p_{1/2}$	9.243+01	6.109+03	1.120+01	4.257+01	5.839+00	1.103+02	2.613+00	0.4
$6p_{1/2}$	6.414+01	4.816+03	2.336+00	2.225+02	5.934+00	5.367+02	7.625+00	0.6
$7p_{1/2}$	4.709+01	3.800+03	2.999+00	1.305+02	5.650+00	5.376+02	4.897+00	1.0
$8p_{1/2}$	3.604+01	3.789+03	3.755+00	7.600+01	5.424+00	5.346+02	3.427+00	1.5
$9p_{1/2}$	2.847+01	2.992+03	4.720+00	4.396+01	5.209+00	5.336+02	2.466+00	1.8
$10p_{1/2}$	2.305+01	2.364+03	5.356+02	8.529+04	5.354+00	4.593+04	1.017+02	1.7
$11p_{1/2}$	1.905+01	2.360+03	5.419+02	6.820+04	5.332+00	4.530+04	9.340+01	2.0
$12p_{1/2}$	1.600+01	1.865+03	6.191+02	6.707+04	5.150+00	5.620+04	5.303+01	2.8
$2p_{3/2}$	5.801+02	1.604+04	1.706+01	1.965+03	4.453+00	1.047+02	2.373+00	0.2
$3p_{3/2}$	2.571+02	9.903+03	7.125+00	3.280+02	6.414+00	1.053+02	5.112+02	0.3
$4p_{3/2}$	1.444+02	7.763+03	8.512+00	1.008+02	6.270+00	1.047+02	3.573+00	0.1
$5p_{3/2}$	9.234+01	6.109+03	1.144+01	4.165+01	5.847+00	1.051+02	2.591+00	0.5
$6p_{3/2}$	6.409+01	4.816+03	2.233+01	6.043+03	6.048+00	5.155+03	7.103+01	0.6
$7p_{3/2}$	4.706+01	3.800+03	2.735+01	4.766+03	5.812+00	5.168+03	4.453+01	0.9
$8p_{3/2}$	3.602+01	3.789+03	3.227+01	3.524+03	5.644+00	5.145+03	3.037+01	1.3
$9p_{3/2}$	2.845+01	2.992+03	3.950+01	2.498+03	5.469+00	5.150+03	1.922+01	1.6
$10p_{3/2}$	2.304+01	2.364+03	4.836+01	1.677+03	5.322+00	5.152+03	1.256+01	1.9
$11p_{3/2}$	1.904+01	2.360+03	6.228+02	6.514+04	5.254+00	4.526+04	7.041+01	1.9
$12p_{3/2}$	1.600+01	1.865+03	6.709+02	6.279+04	5.116+00	5.617+04	4.628+01	2.1
$3d_{3/2}$	2.557+02	5.008+03	1.081+01	3.669+03	6.306+00	6.800+01	2.015+01	0.2
$4d_{3/2}$	1.438+02	3.897+03	5.343+00	7.731+02	8.661+00	6.616+01	1.308+00	0.2
$5d_{3/2}$	9.205+01	3.056+03	5.389+00	2.407+02	8.970+00	6.634+01	3.758+00	0.2
$6d_{3/2}$	6.392+01	2.405+03	6.288+00	1.147+02	8.756+00	6.577+01	3.259+00	0.4
$7d_{3/2}$	4.696+01	2.388+03	6.866+00	7.147+01	8.364+00	7.456+01	2.586+00	0.8
$8d_{3/2}$	3.595+01	1.885+03	4.186+01	8.220+02	8.711+00	1.130+03	2.916+01	0.8
$9d_{3/2}$	2.840+01	1.489+03	5.266+01	7.798+02	8.329+00	1.133+03	1.748+01	1.3
$10d_{3/2}$	2.301+01	1.483+03	6.316+01	6.205+02	8.093+00	1.107+03	1.204+01	1.8
$11d_{3/2}$	1.901+01	1.479+03	2.211+02	4.978+04	8.156+00	3.010+04	3.003+02	1.7
$12d_{3/2}$	1.598+01	1.169+03	3.209+02	7.041+04	7.742+00	3.000+04	1.334+02	2.3
$3d_{5/2}$	2.556+02	5.007+03	1.035+01	3.965+03	6.366+00	6.798+01	6.919+02	0.2
$4d_{5/2}$	1.438+02	3.897+03	5.321+00	7.860+02	8.657+00	6.612+01	5.633+01	0.2
$5d_{5/2}$	9.202+01	3.056+03	5.091+00	2.393+02	9.101+00	6.639+01	4.224+00	0.1
$6d_{5/2}$	6.390+01	2.405+03	6.141+00	1.168+02	8.779+00	6.643+01	3.326+00	0.4
$7d_{5/2}$	4.695+01	2.388+03	7.591+00	6.520+01	8.321+00	6.799+01	2.396+00	0.8
$8d_{5/2}$	3.594+01	1.885+03	1.782+00	1.992+02	8.509+00	2.896+02	6.969+00	1.0
$9d_{5/2}$	2.840+01	1.489+03	2.234+00	1.426+02	8.138+00	2.904+02	4.612+00	1.4
$10d_{5/2}$	2.300+01	1.483+03	2.776+00	9.729+01	7.820+00	2.888+02	3.183+00	2.0
$11d_{5/2}$	1.901+01	1.479+03	2.555+02	6.633+04	7.983+00	3.017+04	2.248+02	2.1
$12d_{5/2}$	1.597+01	1.169+03	2.499+02	5.414+04	7.983+00	3.010+04	2.149+02	1.7
$4f_{5/2}$	1.438+02	1.993+03	9.263+00	3.782+03	8.573+00	3.810+01	1.940+00	0.0
$5f_{5/2}$	9.201+01	1.552+03	4.831+00	1.266+03	1.132+01	3.870+01	3.591+00	0.1
$6f_{5/2}$	6.389+01	1.524+03	5.910+00	4.466+02	1.124+01	3.695+01	2.557+00	0.4
$7f_{5/2}$	4.694+01	1.200+03	6.128+00	2.223+02	1.131+01	3.742+01	2.610+00	0.4
$8f_{5/2}$	3.594+01	1.189+03	1.810+00	2.361+02	1.167+01	1.233+02	7.033+00	0.6
$9f_{5/2}$	2.839+01	9.392+02	2.293+00	1.844+02	1.113+01	1.216+02	4.564+00	1.0
$10f_{5/2}$	2.300+01	9.338+02	2.543+00	1.451+02	1.075+01	1.303+02	3.537+00	1.5
$11f_{5/2}$	1.901+01	9.298+02	3.148+00	1.064+02	1.028+01	1.314+02	2.449+00	2.2
$12f_{5/2}$	1.597+01	7.353+02	3.714+00	7.647+01	9.943+00	1.312+02	1.886+00	2.2
$4f_{7/2}$	1.437+02	1.993+03	8.891+00	4.042+03	8.654+00	3.838+01	2.109+00	0.0
$5f_{7/2}$	9.199+01	1.552+03	7.809+00	9.680+02	1.081+01	2.735+01	2.177+00	0.0
$6f_{7/2}$	6.388+01	1.524+03	8.950+00	3.461+02	1.086+01	2.688+01	1.891+00	0.5
$7f_{7/2}$	4.693+01	1.200+03	8.096+00	1.927+02	1.102+01	3.055+01	2.047+00	0.5
$8f_{7/2}$	3.593+01	1.189+03	1.072+00	3.046+02	1.173+01	2.055+02	1.127+01	0.6
$9f_{7/2}$	2.839+01	9.392+02	1.298+00	2.522+02	1.132+01	2.022+02	7.881+00	0.9

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av.}} \%$
$10f_{7/2}$	2.300+01	9.338+02	1.538+00	2.062+02	1.095+01	2.015+02	5.656+00	1.4
$11f_{7/2}$	1.901+01	9.298+02	1.878+00	1.647+02	1.053+01	2.004+02	3.878+00	2.1
$12f_{7/2}$	1.597+01	7.353+02	2.396+00	1.194+02	1.010+01	1.988+02	2.648+00	2.4
$5g_{7/2}$	9.199+01	1.003+03	2.444+01	3.458+02	9.006+00	1.491+01	1.098+00	0.1
$6s_{7/2}$	6.388+01	9.747+02	1.710+01	6.079+02	1.134+01	1.255+01	1.127+00	0.2
$7g_{7/2}$	4.693+01	7.662+02	1.294+01	4.918+02	1.225+01	1.506+01	1.210+00	0.3
$8g_{7/2}$	3.593+01	7.552+02	6.472+00	4.873+02	1.354+01	2.429+01	1.954+00	0.4
$9g_{7/2}$	2.839+01	5.965+02	3.934+00	3.454+02	1.374+01	4.133+01	2.666+00	0.6
$10g_{7/2}$	2.300+01	5.911+02	7.355–01	3.310+02	1.421+01	2.106+02	1.165+01	0.7
$11g_{7/2}$	1.901+01	5.871+02	8.629–01	3.153+02	1.379+01	2.085+02	8.382+00	1.3
$12g_{7/2}$	1.597+01	4.646+02	3.703+00	1.482+02	1.257+01	7.155+01	1.827+00	1.6
$5g_{9/2}$	9.198+01	1.003+03	1.598+01	1.125+03	9.953+00	1.686+01	1.428+00	0.1
$6g_{9/2}$	6.388+01	9.746+02	1.024+01	1.356+03	1.239+01	1.631+01	1.554+00	0.1
$7g_{9/2}$	4.693+01	7.662+02	1.135+01	5.680+02	1.246+01	1.643+01	1.308+00	0.4
$8g_{9/2}$	3.593+01	7.552+02	4.622+00	5.345+02	1.396+01	3.105+01	2.643+00	0.4
$9g_{9/2}$	2.839+01	5.965+02	5.889+00	3.032+02	1.331+01	3.042+01	1.875+00	0.6
$10g_{9/2}$	2.300+01	5.911+02	3.999+00	2.405+02	1.336+01	4.715+01	2.315+00	0.9
$11g_{9/2}$	1.901+01	5.871+02	3.029+00	2.068+02	1.316+01	6.972+01	2.529+00	1.5
$12g_{9/2}$	1.597+01	4.646+02	2.122+00	2.098+02	1.293+01	1.144+02	2.914+00	1.8
$6l_{9/2}$	6.388+01	6.320+02	2.010+01	4.168+02	1.062+01	1.340+01	9.772–01	0.2
$7h_{9/2}$	4.693+01	4.956+02	8.543+00	2.765+03	1.441+01	1.455+01	1.444+00	0.1
$8h_{9/2}$	3.593+01	4.846+02	7.812+00	1.835+03	1.540+01	1.435+01	1.525+00	0.2
$9h_{9/2}$	2.839+01	4.771+02	5.418+00	1.187+03	1.588+01	2.081+01	1.803+00	0.4
$10h_{9/2}$	2.300+01	3.774+02	4.404+00	7.477+02	1.597+01	2.699+01	1.982+00	0.5
$11h_{9/2}$	1.901+01	3.734+02	3.544+00	5.139+02	1.589+01	3.625+01	2.144+00	0.8
$12h_{9/2}$	1.597+01	3.703+02	1.277+00	3.961+02	1.632+01	9.715+01	4.935+00	1.1
$6l_{11/2}$	6.388+01	6.320+02	1.362+01	1.492+03	1.183+01	1.406+01	1.300+00	0.1
$7h_{11/2}$	4.693+01	4.956+02	1.544+01	6.833+02	1.230+01	1.349+01	8.900–01	0.5
$8h_{11/2}$	3.593+01	4.846+02	6.897+00	1.950+03	1.554+01	1.594+01	1.642+00	0.2
$9h_{11/2}$	2.839+01	4.771+02	4.738+00	1.254+03	1.627+01	2.188+01	2.122+00	0.3
$10h_{11/2}$	2.300+01	3.774+02	4.206+00	7.552+02	1.606+01	2.767+01	2.083+00	0.5
$11h_{11/2}$	1.900+01	3.734+02	3.926+00	5.063+02	1.575+01	3.359+01	1.942+00	0.8
$12h_{11/2}$	1.597+01	3.703+02	3.360+00	3.774+02	1.551+01	4.382+01	1.955+00	1.3
$7i_{11/2}$	4.693+01	4.013+02	1.909+01	2.008+02	1.102+01	1.669+01	7.376–01	0.6
$8i_{11/2}$	3.593+01	3.158+02	8.235+00	4.392+03	1.608+01	1.243+01	1.231+00	0.1
$9i_{11/2}$	2.839+01	3.082+02	7.008+00	3.313+03	1.690+01	1.411+01	1.228+00	0.4
$10i_{11/2}$	2.300+01	3.029+02	5.109+00	2.977+03	1.831+01	1.601+01	1.654+00	0.3
$11i_{11/2}$	1.900+01	2.989+02	3.023+00	1.739+03	1.887+01	2.665+01	2.341+00	0.4
$12i_{11/2}$	1.597+01	2.370+02	3.624+00	1.146+03	1.822+01	2.635+01	1.792+00	0.6
$7i_{13/2}$	4.693+01	4.013+02	1.903+01	2.032+02	1.103+01	1.672+01	7.375–01	0.6
$8i_{13/2}$	3.593+01	3.158+02	9.060+00	3.732+03	1.585+01	1.176+01	1.165+00	0.1
$9i_{13/2}$	2.839+01	3.082+02	7.512+00	3.546+03	1.711+01	1.242+01	1.258+00	0.2
$10i_{13/2}$	2.300+01	3.029+02	4.751+00	3.228+03	1.871+01	1.597+01	1.850+00	0.3
$11i_{13/2}$	1.900+01	2.989+02	3.157+00	1.777+03	1.891+01	2.516+01	2.300+00	0.4
$12i_{13/2}$	1.597+01	2.370+02	3.023+00	1.136+03	1.846+01	3.040+01	2.101+00	0.6
<b>Si<sup>13+</sup></b>								
$1s_{1/2}$	2.674+03	5.300+04	6.436+01	3.481+02	3.754+00	2.272+01	4.590+00	0.3
$2s_{1/2}$	6.689+02	5.100+04	8.428+01	1.372+01	3.977+00	2.220+01	1.647+00	0.1
$3s_{1/2}$	2.971+02	3.169+04	6.780–01	2.648+03	4.183+00	2.819+03	6.945+01	0.3
$4s_{1/2}$	1.670+02	1.975+04	1.101+00	1.589+03	3.702+00	2.772+03	2.973+01	0.7
$5s_{1/2}$	1.069+02	1.557+04	1.595+00	7.808+02	3.417+00	2.764+03	1.451+01	1.0
$6s_{1/2}$	7.419+01	1.229+04	2.219+00	3.586+02	3.219+00	2.762+03	8.102+00	1.3
$7s_{1/2}$	5.450+01	7.673+03	3.418+00	1.341+02	3.029+00	2.753+03	4.472+00	1.3
$8s_{1/2}$	4.172+01	7.660+03	4.200+00	7.038+01	2.930+00	2.755+03	3.366+00	1.6
$9s_{1/2}$	3.296+01	6.050+03	4.091–01	5.059+03	2.948+00	3.192+04	1.531+01	1.6
$10s_{1/2}$	2.669+01	4.779+03	5.605–01	2.316+03	2.871+00	3.192+04	9.198+00	1.6
$11s_{1/2}$	2.206+01	3.775+03	8.162–01	9.234+02	2.801+00	3.191+04	5.949+00	1.5
$12s_{1/2}$	1.854+01	3.771+03	9.394–01	5.745+02	2.764+00	3.191+04	4.897+00	1.7
$2p_{1/2}$	6.689+02	2.025+04	1.563+01	2.792+03	4.576+00	1.060+02	2.966+00	0.4
$3p_{1/2}$	2.971+02	1.251+04	5.947+00	3.049+02	6.889+00	1.071+02	6.489+00	0.5
$4p_{1/2}$	1.670+02	9.813+03	7.874+00	1.043+02	6.501+00	1.074+02	4.642+00	0.1
$5p_{1/2}$	1.069+02	7.725+03	1.072+01	4.490+01	6.062+00	1.055+02	3.194+00	0.5
$6p_{1/2}$	7.419+01	6.091+03	9.386–01	7.011+02	6.136+00	1.241+03	2.238+01	0.7
$7p_{1/2}$	5.450+01	4.806+03	1.194+00	4.884+02	5.850+00	1.234+03	1.352+01	1.1
$8p_{1/2}$	4.172+01	3.795+03	1.498+00	3.210+02	5.614+00	1.235+03	8.565+00	1.4
$9p_{1/2}$	3.296+01	2.997+03	1.406+00	3.223+02	5.436+00	1.627+03	7.212+00	1.6
$10p_{1/2}$	2.669+01	2.991+03	1.712+00	2.055+02	5.277+00	1.629+03	5.026+00	1.9
$11p_{1/2}$	2.206+01	2.363+03	2.112+00	1.260+02	5.130+00	1.629+03	3.651+00	2.4
$12p_{1/2}$	1.854+01	2.359+03	2.652+00	7.457+01	4.984+00	1.631+03	2.699+00	2.2
$2p_{3/2}$	6.671+02	2.025+04	1.597+01	2.720+03	4.600+00	9.716+01	3.170–01	0.3
$3p_{3/2}$	2.966+02	1.251+04	6.903+00	3.205+02	6.677+00	9.931+01	7.755–01	0.2
$4p_{3/2}$	1.668+02	9.813+03	7.971+00	1.001+02	6.570+00	1.001+02	4.848+00	0.2
$5p_{3/2}$	1.067+02	6.123+03	1.112+01	4.359+01	6.047+00	1.010+02	3.102+00	0.6
$6p_{3/2}$	7.412+01	6.091+03	2.033+00	2.540+02	6.088+00	5.786+02	1.072+01	0.8

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$7p_{3/2}$	5.446+01	4.806+03	2.597+00	1.602+02	5.787+00	5.799+02	6.717+00	1.2
$8p_{3/2}$	4.169+01	3.795+03	3.340+00	9.601+01	5.517+00	5.855+02	4.336+00	1.5
$9p_{3/2}$	3.294+01	2.997+03	1.375+00	3.355+02	5.440+00	1.628+03	7.375+00	1.6
$10p_{3/2}$	2.668+01	2.991+03	1.626+00	2.215+02	5.299+00	1.628+03	5.356+00	2.1
$11p_{3/2}$	2.205+01	2.363+03	2.196+00	1.208+02	5.104+00	1.623+03	3.499+00	2.0
$12p_{3/2}$	1.853+01	2.359+03	2.525+00	8.140+01	5.000+00	1.623+03	2.798+00	2.7
$3d_{3/2}$	2.966+02	6.313+03	1.028+01	4.404+03	6.600+00	6.830+01	1.324–01	0.1
$4d_{3/2}$	1.668+02	3.920+03	5.755+00	6.992+02	8.782+00	6.673+01	2.201–01	0.1
$5d_{3/2}$	1.067+02	3.860+03	4.565+00	2.289+02	9.316+00	7.888+01	5.571+00	0.1
$6d_{3/2}$	7.412+01	3.038+03	5.446+00	1.182+02	8.994+00	7.941+01	4.317+00	0.4
$7d_{3/2}$	5.446+01	2.395+03	7.140+00	6.714+01	8.469+00	7.886+01	2.864+00	0.8
$8d_{3/2}$	4.169+01	2.383+03	3.638–01	9.292+02	8.745+00	1.472+03	3.885+01	1.0
$9d_{3/2}$	3.294+01	1.882+03	4.331–01	8.986+02	8.429+00	1.492+03	2.590+01	1.3
$10d_{3/2}$	2.668+01	1.875+03	5.039–01	7.748+02	8.200+00	1.487+03	1.829+01	1.7
$11d_{3/2}$	2.205+01	1.482+03	2.392–01	2.388+03	7.998+00	3.674+03	3.007+01	2.0
$12d_{3/2}$	1.853+01	1.479+03	2.901–01	2.036+03	7.777+00	3.676+03	1.966+01	2.0
$3d_{5/2}$	2.964+02	6.313+03	9.960+00	4.648+03	6.644+00	6.828+01	1.155–01	0.1
$4d_{5/2}$	1.667+02	3.920+03	5.685+00	7.011+02	8.817+00	6.624+01	4.413–01	0.1
$5d_{5/2}$	1.067+02	3.860+03	4.438+00	2.290+02	9.364+00	7.931+01	5.791+00	0.1
$6d_{5/2}$	7.410+01	3.038+03	5.370+00	1.180+02	9.032+00	7.890+01	4.427+00	0.4
$7d_{5/2}$	5.444+01	2.395+03	6.807+00	7.019+01	8.494+00	8.159+01	2.970+00	0.8
$8d_{5/2}$	4.168+01	2.383+03	6.175–01	5.314+02	8.728+00	8.682+02	2.311+01	1.0
$9d_{5/2}$	3.293+01	1.882+03	7.562–01	4.672+02	8.395+00	8.642+02	1.500+01	1.3
$10d_{5/2}$	2.668+01	1.875+03	8.741–01	3.809+02	8.167+00	8.660+02	1.089+01	1.8
$11d_{5/2}$	2.205+01	1.482+03	2.354–01	2.459+03	7.996+00	3.731+03	3.050+01	1.9
$12d_{5/2}$	1.852+01	1.479+03	2.703–01	2.114+03	7.826+00	3.718+03	2.156+01	2.6
$4f_{5/2}$	1.667+02	2.508+03	1.023+01	3.529+03	8.659+00	3.870+01	2.110+00	0.0
$5f_{5/2}$	1.067+02	1.956+03	3.849+01	8.635+01	8.049+00	1.564+01	8.937–01	0.5
$6f_{5/2}$	7.410+01	1.534+03	1.353+01	2.455+02	1.077+01	2.072+01	1.709+00	0.2
$7f_{5/2}$	5.444+01	1.515+03	9.728+00	1.624+02	1.104+01	2.920+01	2.026+00	0.4
$8f_{5/2}$	4.168+01	1.195+03	3.464+00	1.707+02	1.144+01	7.985+01	4.328+00	0.6
$9f_{5/2}$	3.293+01	1.186+03	4.171+00	1.191+02	1.097+01	8.042+01	3.119+00	1.0
$10f_{5/2}$	2.668+01	1.180+03	5.131+00	8.124+01	1.051+01	7.949+01	2.255+00	1.5
$11f_{5/2}$	2.205+01	9.328+02	8.504–01	3.053+02	1.081+01	4.661+02	9.694+00	1.6
$12f_{5/2}$	1.852+01	9.293+02	1.052–01	2.396+03	1.077+01	3.916+03	6.503+01	1.7
$4f_{7/2}$	1.667+02	2.508+03	1.016+01	3.586+03	8.668+00	3.873+01	2.105+00	0.0
$5f_{7/2}$	1.067+02	1.956+03	1.050+01	7.391+02	1.070+01	2.422+01	2.009+00	0.0
$6f_{7/2}$	7.409+01	1.534+03	1.211+01	2.641+02	1.071+01	2.392+01	1.729+00	0.4
$7f_{7/2}$	5.443+01	1.515+03	9.013+00	1.701+02	1.111+01	3.097+01	2.147+00	0.5
$8f_{7/2}$	4.168+01	1.195+03	4.145+00	1.578+02	1.135+01	6.813+01	3.690+00	0.6
$9f_{7/2}$	3.293+01	1.186+03	5.302+00	1.027+02	1.083+01	6.575+01	2.539+00	1.0
$10f_{7/2}$	2.667+01	1.180+03	5.331–01	3.983+02	1.122+01	6.119+02	1.871+01	1.3
$11f_{7/2}$	2.204+01	9.328+02	6.309–01	4.005+02	1.084+01	6.195+02	1.281+01	1.6
$12f_{7/2}$	1.852+01	9.293+02	1.050–01	2.403+03	1.077+01	3.916+03	6.513+01	1.7
$5g_{7/2}$	1.067+02	1.260+03	2.175+01	6.546+02	9.705+00	1.543+01	1.325+00	0.1
$6g_{7/2}$	7.409+01	9.849+02	1.808+01	6.170+02	1.154+01	1.316+01	1.191+00	0.1
$7g_{7/2}$	5.443+01	9.652+02	1.393+01	5.186+02	1.273+01	1.414+01	1.360+00	0.3
$8g_{7/2}$	4.168+01	7.610+02	6.303+00	4.427+02	1.373+01	2.789+01	2.271+00	0.3
$9g_{7/2}$	3.293+01	7.522+02	1.636+00	3.081+02	1.442+01	9.892+01	7.220+00	0.4
$10g_{7/2}$	2.667+01	7.460+02	1.919+00	2.455+02	1.403+01	9.699+01	5.384+00	0.8
$11g_{7/2}$	2.204+01	5.901+02	2.320+00	2.058+02	1.346+01	9.798+01	3.757+00	1.1
$12g_{7/2}$	1.852+01	5.866+02	2.774+00	1.623+02	1.299+01	9.792+01	2.739+00	1.7
$5g_{9/2}$	1.067+02	1.260+03	2.188+01	6.448+02	9.686+00	1.541+01	1.315+00	0.1
$6g_{9/2}$	7.409+01	9.849+02	1.689+01	7.022+02	1.171+01	1.347+01	1.251+00	0.1
$7g_{9/2}$	5.443+01	9.652+02	1.206+01	5.881+02	1.295+01	1.566+01	1.497+00	0.2
$8g_{9/2}$	4.167+01	7.610+02	2.455+00	4.745+02	1.444+01	6.176+01	5.288+00	0.2
$9g_{9/2}$	3.293+01	7.522+02	2.741+00	3.091+02	1.419+01	6.194+01	4.399+00	0.5
$10g_{9/2}$	2.667+01	7.460+02	3.224+00	2.263+02	1.374+01	6.165+01	3.297+00	0.9
$11g_{9/2}$	2.204+01	5.901+02	4.094+00	1.646+02	1.304+01	6.198+01	2.224+00	1.2
$12g_{9/2}$	1.852+01	5.866+02	2.656+00	1.660+02	1.302+01	1.014+02	2.856+00	1.7
$6h_{9/2}$	7.409+01	6.422+02	2.281+01	3.882+02	1.070+01	1.340+01	9.971–01	0.1
$7h_{9/2}$	5.443+01	6.225+02	2.285+01	2.708+02	1.138+01	1.358+01	7.722–01	0.5
$8h_{9/2}$	4.167+01	6.098+02	1.186+01	1.238+03	1.485+01	1.207+01	1.247+00	0.3
$9h_{9/2}$	3.293+01	4.816+02	6.231+00	1.017+03	1.588+01	2.104+01	1.824+00	0.3
$10h_{9/2}$	2.667+01	4.753+02	5.329+00	6.459+02	1.598+01	2.564+01	1.938+00	0.5
$11h_{9/2}$	2.204+01	4.707+02	4.329+00	4.414+02	1.589+01	3.416+01	2.072+00	0.8
$12h_{9/2}$	1.852+01	3.729+02	1.527+00	3.356+02	1.633+01	9.420+01	4.869+00	0.8
$6h_{11/2}$	7.408+01	6.422+02	2.277+01	3.912+02	1.070+01	1.340+01	9.926–01	0.1
$7h_{11/2}$	5.443+01	6.225+02	1.124+01	1.990+03	1.413+01	1.356+01	1.323+00	0.1
$8h_{11/2}$	4.167+01	6.098+02	1.159+01	1.097+03	1.454+01	1.348+01	1.191+00	0.3
$9h_{11/2}$	3.293+01	4.816+02	5.623+00	1.074+03	1.624+01	2.152+01	2.091+00	0.2
$10h_{11/2}$	2.667+01	4.753+02	5.176+00	6.484+02	1.602+01	2.621+01	1.991+00	0.5
$11h_{11/2}$	2.204+01	4.707+02	2.796+00	4.377+02	1.640+01	4.771+01	3.165+00	0.7
$12h_{11/2}$	1.852+01	3.729+02	3.580+00	3.276+02	1.562+01	4.678+01	2.139+00	1.0

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$7i_{11/2}$	5.443+01	4.088+02	2.307+01	1.463+02	1.092+01	1.652+01	7.329–01	0.4
$8i_{11/2}$	4.167+01	3.960+02	1.076+01	3.046+03	1.576+01	1.169+01	1.137+00	0.1
$9i_{11/2}$	3.293+01	3.873+02	8.342+00	3.493+03	1.744+01	1.213+01	1.356+00	0.2
$10i_{11/2}$	2.667+01	3.810+02	1.312+00	1.355+03	1.983+01	5.789+01	6.575+00	0.2
$11i_{11/2}$	2.204+01	3.019+02	1.337+00	7.786+02	2.001+01	5.795+01	6.491+00	0.2
$12i_{11/2}$	1.852+01	2.984+02	1.569+00	7.001+02	1.939+01	5.773+01	4.715+00	0.5
$7i_{13/2}$	5.443+01	4.088+02	2.303+01	1.473+02	1.092+01	1.652+01	7.346–01	0.4
$8i_{13/2}$	4.167+01	3.960+02	9.905+00	3.579+03	1.600+01	1.215+01	1.201+00	0.1
$9i_{13/2}$	3.292+01	3.873+02	7.198+00	3.631+03	1.752+01	1.407+01	1.427+00	0.2
$10i_{13/2}$	2.667+01	3.810+02	5.501+00	2.741+03	1.866+01	1.618+01	1.829+00	0.3
$11i_{13/2}$	2.204+01	3.019+02	7.664–01	5.910+02	1.991+01	1.041+02	1.029+01	0.3
$12i_{13/2}$	1.852+01	2.984+02	8.363–01	4.726+02	1.968+01	1.035+02	8.758+00	0.5
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$3s_{1/2}$	1.138+02	2.491+04	1.017+00	7.924+01	4.869+00	1.995+03	8.696–03	1.3
$4s_{1/2}$	5.650+01	1.552+04	2.325–02	2.764+04	4.159+00	1.720+05	2.162+00	2.2
$5s_{1/2}$	3.382+01	9.680+03	3.804–02	2.314+04	3.820+00	1.720+05	2.289+00	2.4
$6s_{1/2}$	2.251+01	7.641+03	5.669–02	1.360+04	3.621+00	1.720+05	2.307+00	2.6
$7s_{1/2}$	1.606+01	6.033+03	8.466–02	6.655+03	3.477+00	1.720+05	9.815–04	2.6
$8s_{1/2}$	1.203+01	4.764+03	1.355–01	2.652+03	3.360+00	1.720+05	2.015–01	2.5
$9s_{1/2}$	9.349+00	3.762+03	3.511–01	4.486+02	3.214+00	1.720+05	4.944–02	2.9
$10s_{1/2}$	7.473+00	2.971+03	4.079–01	2.753+02	3.162+00	2.150+05	2.843+00	2.4
$11s_{1/2}$	6.111+00	2.347+03	4.076–01	2.192+02	3.139+00	2.150+05	3.489+00	2.6
$12s_{1/2}$	5.090+00	2.346+03	1.295–01	1.663+03	3.089+00	4.050+06	2.346–04	3.0
$3p_{1/2}$	9.851+01	7.717+03	2.413+01	1.941+01	6.333+00	4.841+01	3.752–05	0.8
$4p_{1/2}$	5.089+01	6.068+03	7.596+00	2.080+01	6.614+00	1.470+02	1.876–02	0.9
$5p_{1/2}$	3.116+01	4.783+03	1.694+00	5.112+01	6.649+00	6.797+02	2.372–01	0.8
$6p_{1/2}$	2.104+01	3.774+03	2.243+00	3.093+01	6.302+00	6.784+02	2.819+00	1.3
$7p_{1/2}$	1.517+01	2.979+03	3.028+00	1.813+01	5.973+00	6.780+02	2.202+00	1.8
$8p_{1/2}$	1.145+01	2.352+03	1.369–01	8.802+02	6.078+00	1.490+04	2.650+01	1.8
$9p_{1/2}$	8.947+00	2.350+03	1.722–01	6.493+02	5.904+00	1.491+04	1.837+01	2.6
$10p_{1/2}$	7.185+00	1.856+03	2.289–01	4.294+02	5.732+00	1.490+04	1.180+01	3.4
$11p_{1/2}$	5.897+00	1.466+03	3.285–01	2.383+02	5.568+00	1.491+04	7.314+00	3.8
$12p_{1/2}$	4.927+00	1.465+03	3.763–01	1.672+02	5.494+00	1.490+04	6.115+00	4.2
$3p_{3/2}$	9.827+01	7.716+03	2.356+01	2.022+01	6.362+00	4.764+01	4.916–05	0.9
$4p_{3/2}$	5.080+01	6.068+03	8.537+00	1.942+01	6.554+00	1.323+02	7.326–01	1.0
$5p_{3/2}$	3.112+01	4.783+03	8.080–01	9.827+01	6.789+00	1.262+03	7.082–04	0.8
$6p_{3/2}$	2.102+01	3.774+03	1.090+00	6.911+01	6.408+00	1.265+03	4.576+00	1.1
$7p_{3/2}$	1.515+01	2.979+03	1.448+00	4.372+01	6.112+00	1.264+03	3.692+00	1.7
$8p_{3/2}$	1.144+01	2.352+03	1.352–01	9.338+02	6.068+00	1.491+04	2.654+01	1.7
$9p_{3/2}$	8.941+00	1.858+03	1.765–01	6.682+02	5.878+00	1.491+04	1.736+01	2.4
$10p_{3/2}$	7.181+00	1.856+03	2.288–01	4.453+02	5.721+00	1.491+04	1.167+01	3.3
$11p_{3/2}$	5.894+00	1.466+03	2.993–01	2.762+02	5.587+00	1.491+04	8.046+00	3.8
$12p_{3/2}$	4.924+00	1.465+03	3.637–01	1.791+02	5.497+00	1.491+04	6.289+00	4.7
$3d_{3/2}$	7.778+01	2.419+03	8.347+00	5.904+02	5.649+00	2.806+02	2.774+00	1.7
$4d_{3/2}$	4.346+01	1.892+03	6.529+00	3.020+02	6.154+00	2.793+02	2.853–01	0.9
$5d_{3/2}$	2.763+01	1.488+03	4.358+00	2.327+02	6.734+00	2.784+02	8.933–01	0.7
$6d_{3/2}$	1.908+01	1.172+03	4.482+00	1.184+02	6.764+00	2.777+02	1.159+00	0.5
$7d_{3/2}$	1.396+01	9.247+02	3.651+00	9.775+01	6.979+00	2.784+02	1.346+00	1.7
$8d_{3/2}$	1.066+01	9.214+02	1.817+00	1.805+02	7.242+00	4.958+02	1.865+00	0.9
$9d_{3/2}$	8.401+00	7.277+02	1.971+00	1.177+02	7.145+00	4.966+02	1.727+00	0.9
$10d_{3/2}$	6.791+00	7.261+02	1.880–01	3.311+03	7.529+00	4.002+03	6.722+00	0.7
$11d_{3/2}$	5.604+00	5.737+02	1.939–01	2.414+03	7.509+00	4.001+03	7.695+00	1.6
$12d_{3/2}$	4.702+00	5.728+02	2.150–01	1.727+03	7.434+00	4.001+03	6.744+00	1.6
$3d_{5/2}$	7.777+01	2.419+03	8.329+00	5.923+02	5.658+00	2.758+02	2.793+00	1.7
$4d_{5/2}$	4.346+01	1.892+03	6.532+00	3.013+02	6.162+00	2.747+02	3.658–01	0.9
$5d_{5/2}$	2.762+01	1.488+03	4.677+00	2.114+02	6.664+00	2.740+02	8.094–01	0.6
$6d_{5/2}$	1.908+01	1.172+03	4.518+00	1.173+02	6.760+00	2.739+02	1.153+00	0.5
$7d_{5/2}$	1.396+01	9.247+02	3.640+00	9.815+01	6.990+00	2.741+02	1.354+00	1.8
$8d_{5/2}$	1.066+01	9.214+02	1.549+00	2.262+02	7.310+00	5.483+02	2.031+00	1.0
$9d_{5/2}$	8.400+00	7.277+02	1.657+00	1.480+02	7.241+00	5.478+02	1.961+00	0.6
$10d_{5/2}$	6.791+00	7.261+02	1.867–01	3.324+03	7.534+00	4.002+03	6.965+00	0.9
$11d_{5/2}$	5.603+00	5.737+02	1.876–01	2.493+03	7.529+00	4.001+03	8.101+00	0.7
$12d_{5/2}$	4.702+00	5.728+02	2.214–01	1.690+03	7.413+00	3.999+03	6.420+00	3.5
$4f_{5/2}$	4.172+01	7.610+02	1.012+01	3.315+02	5.058+00	2.790+02	7.246–01	1.9
$5f_{5/2}$	2.671+01	5.948+02	1.379+01	5.275+01	5.201+00	2.789+02	6.029–01	0.9
$6f_{5/2}$	1.855+01	4.672+02	6.456+00	2.079+02	7.797+00	5.386+01	8.457–01	1.4
$7f_{5/2}$	1.363+01	4.623+02	4.469+00	2.286+02	8.521+00	5.971+01	9.815–01	1.4
$8f_{5/2}$	1.043+01	3.648+02	3.007–02	4.914+04	1.052+01	4.003+03	8.989+00	1.5
$9f_{5/2}$	8.241+00	3.626+02	3.369–02	3.900+04	1.037+01	4.003+03	9.033+00	1.2
$10f_{5/2}$	6.675+00	2.865+02	3.105–02	1.741+04	1.063+01	3.883+03	6.096+01	0.8
$11f_{5/2}$	5.516+00	2.854+02	3.395–02	1.540+04	1.048+01	3.886+03	5.318+01	0.7
$12f_{5/2}$	4.635+00	2.845+02	3.396–02	1.135+04	1.049+01	3.886+03	5.320+01	0.5
$4f_{7/2}$	4.172+01	7.610+02	1.019+01	3.244+02	5.051+00	2.793+02	7.315–01	1.9
$5f_{7/2}$	2.671+01	5.948+02	1.379+01	5.280+01	5.199+00	2.801+02	6.024–01	0.9

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$6f_{7/2}$	1.855+01	4.672+02	6.248+00	2.247+02	7.921+00	5.129+01	8.727–01	1.6
$7f_{7/2}$	1.363+01	4.623+02	4.203+00	2.608+02	8.839+00	5.180+01	1.072+00	2.0
$8f_{7/2}$	1.043+01	3.648+02	3.009–02	4.935+04	1.052+01	4.001+03	8.194+00	1.5
$9f_{7/2}$	8.241+00	3.626+02	3.375–02	3.918+04	1.037+01	4.002+03	8.221+00	1.2
$10f_{7/2}$	6.675+00	2.865+02	3.052–02	1.764+04	1.063+01	3.942+03	6.232+01	0.8
$11f_{7/2}$	5.516+00	2.854+02	3.320–02	1.543+04	1.049+01	3.945+03	5.506+01	0.6
$12f_{7/2}$	4.635+00	2.845+02	3.430–02	1.225+04	1.045+01	3.944+03	5.062+01	0.8
$5g_{7/2}$	2.667+01	3.065+02	7.908+00	6.918+02	8.416+00	1.797+01	1.024+00	0.7
$6g_{7/2}$	1.852+01	2.984+02	2.873+00	4.012+03	1.160+01	2.215+01	1.146+00	0.5
$7g_{7/2}$	1.361+01	2.346+02	2.764+00	2.128+03	1.245+01	2.044+01	1.380+00	0.2
$8g_{7/2}$	1.042+01	2.314+02	2.696+00	1.215+03	1.263+01	2.165+01	1.390+00	0.4
$9g_{7/2}$	8.231+00	1.828+02	2.127+00	8.919+02	1.294+01	2.706+01	1.601+00	0.5
$10g_{7/2}$	6.668+00	1.812+02	2.058+00	6.452+02	1.310+01	2.706+01	1.619+00	1.4
$11g_{7/2}$	5.510+00	1.801+02	6.469–01	7.121+02	1.360+01	8.424+01	3.891+00	1.0
$12g_{7/2}$	4.630+00	1.425+02	7.691–01	5.383+02	1.322+01	8.175+01	3.017+00	1.2
$5g_{9/2}$	2.667+01	3.065+02	6.618+00	1.052+03	8.295+00	2.428+01	9.422–01	0.3
$6g_{9/2}$	1.852+01	2.984+02	4.667+00	1.742+03	1.078+01	1.695+01	1.031+00	0.4
$7g_{9/2}$	1.361+01	2.346+02	3.267+00	1.846+03	1.231+01	1.757+01	1.288+00	0.4
$8g_{9/2}$	1.042+01	2.314+02	2.310+00	1.369+03	1.284+01	2.415+01	1.550+00	0.4
$9g_{9/2}$	8.231+00	1.828+02	2.062+00	9.013+02	1.293+01	2.814+01	1.625+00	0.5
$10g_{9/2}$	6.667+00	1.812+02	2.010+00	6.455+02	1.307+01	2.813+01	1.635+00	1.3
$11g_{9/2}$	5.510+00	1.801+02	1.696+00	4.749+02	1.276+01	3.942+01	1.657+00	1.1
$12g_{9/2}$	4.630+00	1.425+02	1.299+00	4.149+02	1.268+01	5.628+01	1.859+00	1.4
$6h_{9/2}$	1.852+01	1.931+02	4.537+00	2.750+03	1.080+01	1.706+01	9.759–01	0.5
$7h_{9/2}$	1.361+01	1.515+02	3.413+00	6.203+03	1.389+01	1.158+01	1.248+00	0.1
$8h_{9/2}$	1.042+01	1.483+02	1.899+00	6.680+03	1.542+01	1.731+01	1.617+00	0.3
$9h_{9/2}$	8.231+00	1.461+02	1.413+00	4.287+03	1.615+01	2.181+01	2.034+00	0.4
$10h_{9/2}$	6.667+00	1.155+02	1.674+00	2.354+03	1.556+01	2.230+01	1.617+00	0.7
$11h_{9/2}$	5.510+00	1.144+02	8.571–01	1.720+03	1.633+01	3.937+01	2.824+00	0.8
$12h_{9/2}$	4.630+00	1.135+02	9.080–01	1.245+03	1.604+01	4.101+01	2.486+00	1.1
$6h_{11/2}$	1.852+01	1.931+02	4.534+00	2.769+03	1.081+01	1.700+01	9.756–01	0.5
$7h_{11/2}$	1.361+01	1.515+02	3.094+00	6.806+03	1.388+01	1.295+01	1.241+00	0.1
$8h_{11/2}$	1.042+01	1.483+02	3.110+00	3.803+03	1.423+01	1.344+01	1.108+00	0.5
$9h_{11/2}$	8.231+00	1.461+02	2.285+00	3.274+03	1.513+01	1.651+01	1.327+00	0.6
$10h_{11/2}$	6.667+00	1.155+02	2.242+00	2.280+03	1.537+01	1.656+01	1.334+00	1.0
$11h_{11/2}$	5.510+00	1.144+02	1.484+00	1.636+03	1.566+01	2.579+01	1.718+00	0.8
$12h_{11/2}$	4.630+00	1.135+02	9.858–01	1.236+03	1.594+01	3.857+01	2.309+00	1.2
$7i_{11/2}$	1.361+01	1.225+02	6.037+00	4.844+02	1.075+01	1.645+01	7.207–01	0.7
$8i_{11/2}$	1.042+01	9.641+01	3.011+00	9.795+03	1.547+01	1.099+01	1.075+00	0.2
$9i_{11/2}$	8.231+00	9.423+01	1.934+00	1.422+04	1.747+01	1.310+01	1.396+00	0.2
$10i_{11/2}$	6.667+00	9.266+01	1.046+00	1.023+04	1.880+01	2.113+01	2.209+00	0.3
$11i_{11/2}$	5.510+00	9.151+01	1.115+00	6.286+03	1.866+01	2.151+01	2.006+00	0.6
$12i_{11/2}$	4.630+00	7.255+01	7.019–01	3.644+03	1.900+01	3.427+01	2.857+00	0.6
$7i_{13/2}$	1.361+01	1.225+02	6.113+00	4.544+02	1.069+01	1.660+01	7.143–01	0.8
$8i_{13/2}$	1.042+01	9.641+01	2.909+00	1.065+04	1.559+01	1.111+01	1.104+00	0.2
$9i_{13/2}$	8.231+00	9.423+01	2.537+00	8.250+03	1.628+01	1.265+01	1.057+00	0.6
$10i_{13/2}$	6.667+00	9.266+01	1.869+00	8.274+03	1.750+01	1.473+01	1.299+00	0.6
$11i_{13/2}$	5.510+00	9.151+01	1.141+00	6.374+03	1.867+01	2.090+01	1.976+00	0.5
$12i_{13/2}$	4.630+00	7.255+01	1.125+00	4.014+03	1.838+01	2.368+01	1.850+00	0.7
Cl <sup>14+</sup>								
$2s_{1/2}$	8.093+02	5.114+04	1.377–01	1.665+03	5.354+00	9.600+03	2.193+01	0.4
$3s_{1/2}$	3.527+02	4.010+04	3.189–01	7.835+03	4.133+00	9.600+03	2.130+01	0.3
$4s_{1/2}$	1.966+02	2.499+04	5.284–01	5.753+03	3.654+00	9.600+03	2.166+01	0.8
$5s_{1/2}$	1.251+02	1.971+04	6.717–01	3.209+03	3.468+00	9.623+03	3.159+01	0.9
$6s_{1/2}$	8.658+01	1.555+04	9.032–01	1.675+03	3.292+00	9.629+03	1.809+01	1.1
$7s_{1/2}$	6.345+01	1.228+04	1.202+00	8.321+02	3.159+00	9.629+03	1.097+01	1.3
$8s_{1/2}$	4.848+01	9.694+03	1.619+00	3.931+02	3.048+00	9.634+03	6.986+00	1.5
$9s_{1/2}$	3.825+01	7.656+03	2.462–01	1.261+04	3.007+00	7.640+04	2.676+01	1.5
$10s_{1/2}$	3.095+01	6.048+03	3.295–01	6.144+03	2.939+00	7.640+04	1.650+01	1.5
$11s_{1/2}$	2.555+01	4.777+03	4.749–01	2.565+03	2.873+00	7.640+04	9.824+00	1.5
$12s_{1/2}$	2.145+01	4.773+03	5.684–01	1.492+03	2.836+00	7.640+04	7.730+00	1.7
$2p_{1/2}$	7.794+02	2.557+04	4.160+01	4.411+02	3.987+00	1.045+02	1.675+00	0.4
$3p_{1/2}$	3.444+02	1.581+04	7.956+01	1.651+01	4.712+00	3.762+01	1.117+00	0.1
$4p_{1/2}$	1.932+02	9.839+03	2.099+01	3.883+01	5.823+00	8.064+01	2.133+00	0.1
$5p_{1/2}$	1.234+02	7.742+03	3.518+00	2.036+02	6.057+00	4.550+02	7.243+00	0.2
$6p_{1/2}$	8.559+01	6.102+03	4.256+00	1.141+02	5.823+00	4.555+02	5.556+00	0.5
$7p_{1/2}$	6.283+01	6.080+03	5.228+00	6.599+01	5.590+00	4.558+02	3.967+00	0.9
$8p_{1/2}$	4.807+01	4.800+03	6.767+00	3.619+01	5.336+00	4.545+02	2.739+00	1.3
$9p_{1/2}$	3.796+01	3.791+03	2.413–01	7.138+03	5.473+00	1.214+04	4.076+01	1.3
$10p_{1/2}$	3.074+01	3.784+03	2.765–01	5.236+03	5.367+00	1.215+04	2.963+01	1.5
$11p_{1/2}$	2.539+01	2.989+03	3.190–01	3.803+03	5.266+00	1.217+04	2.082+01	2.1
$12p_{1/2}$	2.133+01	2.985+03	4.742–01	1.928+03	5.089+00	1.218+04	1.067+01	2.5
$2p_{3/2}$	7.768+02	2.557+04	3.369+01	6.792+02	4.148+00	1.051+02	1.738+00	0.3

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$3p_{3/2}$	3.437+02	1.581+04	1.006+01	2.418+02	6.226+00	1.199+02	4.793–02	0.6
$4p_{3/2}$	1.929+02	9.839+03	1.211+01	7.448+01	6.077+00	1.185+02	2.950+00	0.1
$5p_{3/2}$	1.232+02	7.741+03	1.541+01	3.094+01	5.759+00	1.189+02	2.503+00	0.3
$6p_{3/2}$	8.550+01	6.102+03	1.216–01	1.922+04	5.992+00	1.396+04	1.634+02	0.4
$7p_{3/2}$	6.277+01	6.079+03	1.423–01	1.589+04	5.806+00	1.401+04	1.131+02	0.8
$8p_{3/2}$	4.803+01	4.800+03	1.690–01	1.278+04	5.632+00	1.406+04	7.457+01	1.1
$9p_{3/2}$	3.793+01	3.791+03	2.018–01	9.738+03	5.479+00	1.411+04	4.884+01	1.3
$10p_{3/2}$	3.071+01	3.784+03	2.289–01	7.328+03	5.375+00	1.412+04	3.541+01	1.7
$11p_{3/2}$	2.538+01	2.989+03	1.382–01	1.802+04	5.268+00	2.801+04	4.655+01	1.4
$12p_{3/2}$	2.132+01	2.985+03	1.554–01	1.358+04	5.191+00	2.800+04	3.426+01	2.0
$3d_{3/2}$	3.406+02	6.357+03	1.609+01	2.218+03	6.157+00	6.812+01	3.764–01	0.4
$4d_{3/2}$	1.916+02	4.943+03	7.836+00	5.591+02	8.464+00	6.611+01	4.002–01	0.3
$5d_{3/2}$	1.226+02	3.876+03	7.248+00	1.822+02	8.894+00	6.861+01	3.649+00	0.1
$6d_{3/2}$	8.512+01	3.049+03	8.414+00	8.711+01	8.675+00	6.869+01	3.171+00	0.3
$7d_{3/2}$	6.253+01	3.027+03	1.074+01	4.638+01	8.222+00	6.819+01	2.256+00	0.7
$8d_{3/2}$	4.787+01	2.389+03	3.482+00	1.031+02	8.397+00	2.102+02	4.922+00	0.9
$9d_{3/2}$	3.782+01	2.379+03	4.384+00	6.747+01	8.068+00	2.028+02	3.403+00	1.4
$10d_{3/2}$	3.063+01	1.879+03	5.704+00	4.231+01	7.689+00	1.998+02	2.314+00	1.6
$11d_{3/2}$	2.532+01	1.874+03	6.843–01	5.659+02	7.966+00	1.510+03	1.282+01	1.9
$12d_{3/2}$	2.127+01	1.481+03	8.513–01	4.324+02	7.723+00	1.500+03	8.346+00	1.8
$3d_{5/2}$	3.404+02	6.357+03	1.597+01	2.271+03	6.152+00	6.822+01	3.946–01	0.3
$4d_{5/2}$	1.915+02	4.943+03	7.618+00	5.712+02	8.508+00	6.630+01	2.583–01	0.3
$5d_{5/2}$	1.225+02	3.875+03	8.006+00	1.671+02	8.900+00	6.132+01	3.469+00	0.1
$6d_{5/2}$	8.509+01	3.049+03	9.399+00	7.986+01	8.629+00	6.202+01	2.900+00	0.3
$7d_{5/2}$	6.251+01	3.027+03	6.788+00	7.016+01	8.489+00	9.681+01	3.291+00	0.7
$8d_{5/2}$	4.786+01	2.389+03	8.901+00	4.041+01	8.013+00	9.572+01	2.226+00	1.0
$9d_{5/2}$	3.781+01	2.379+03	4.513+00	6.520+01	8.066+00	1.958+02	3.330+00	1.4
$10d_{5/2}$	3.063+01	1.879+03	5.800+00	4.131+01	7.694+00	1.942+02	2.299+00	1.6
$11d_{5/2}$	2.531+01	1.874+03	1.118–01	7.566+03	8.021+00	8.940+03	7.408+01	1.8
$12d_{5/2}$	2.127+01	1.481+03	1.310–01	6.994+03	7.835+00	8.945+03	5.139+01	2.0
$4f_{5/2}$	1.914+02	2.532+03	1.491+01	1.956+03	8.426+00	3.335+01	1.869+00	0.0
$5f_{5/2}$	1.225+02	2.463+03	8.902+00	8.239+02	1.081+01	3.240+01	2.209+00	0.1
$6f_{5/2}$	8.507+01	1.934+03	7.939+00	3.190+02	1.147+01	3.406+01	2.894+00	0.1
$7f_{5/2}$	6.250+01	1.523+03	9.369+00	1.553+02	1.117+01	3.397+01	2.320+00	0.4
$8f_{5/2}$	4.785+01	1.508+03	1.495+00	2.126+02	1.177+01	1.941+02	1.118+01	0.5
$9f_{5/2}$	3.781+01	1.191+03	1.833+00	1.773+02	1.134+01	1.898+02	7.651+00	0.7
$10f_{5/2}$	3.062+01	1.184+03	2.137+00	1.445+02	1.098+01	1.907+02	5.594+00	1.2
$11f_{5/2}$	2.531+01	1.179+03	2.507+00	1.144+02	1.064+01	1.902+02	4.136+00	1.6
$12f_{5/2}$	2.127+01	9.320+02	3.144+00	8.612+01	1.020+01	1.909+02	2.836+00	1.9
$4f_{7/2}$	1.914+02	2.532+03	6.401+00	9.455+03	8.861+00	6.730+01	2.082+00	0.1
$5f_{7/2}$	1.225+02	2.463+03	3.899+00	1.510+03	1.115+01	6.822+01	2.785+00	0.1
$6f_{7/2}$	8.506+01	1.934+03	3.394+00	4.207+02	1.191+01	7.173+01	6.000+00	0.1
$7f_{7/2}$	6.249+01	1.523+03	3.551+00	2.048+02	1.197+01	7.214+01	5.894+00	0.2
$8f_{7/2}$	4.784+01	1.508+03	4.414+00	1.417+02	1.140+01	7.247+01	3.948+00	0.6
$9f_{7/2}$	3.780+01	1.191+03	5.496+00	9.615+01	1.085+01	7.336+01	2.734+00	0.9
$10f_{7/2}$	3.062+01	1.184+03	6.616+00	6.456+01	1.042+01	7.327+01	2.046+00	1.3
$11f_{7/2}$	2.531+01	1.178+03	1.940–01	1.044+03	1.100+01	2.168+03	4.943+01	1.5
$12f_{7/2}$	2.126+01	9.320+02	2.307–01	1.175+03	1.068+01	2.155+03	3.342+01	1.7
$5g_{7/2}$	1.225+02	1.276+03	2.884+01	3.792+02	9.365+00	1.491+01	1.205+00	0.1
$6g_{7/2}$	8.506+01	1.238+03	2.287+01	4.401+02	1.127+01	1.281+01	1.115+00	0.2
$7g_{7/2}$	6.249+01	9.733+02	1.615+01	4.530+02	1.276+01	1.388+01	1.367+00	0.3
$8g_{7/2}$	4.784+01	9.586+02	7.857+00	3.797+02	1.376+01	2.524+01	2.177+00	0.3
$9g_{7/2}$	3.780+01	9.486+02	5.908+00	2.507+02	1.373+01	3.644+01	2.461+00	0.6
$10g_{7/2}$	3.062+01	7.499+02	8.712–01	2.422+02	1.427+01	2.332+02	1.338+01	0.6
$11g_{7/2}$	2.531+01	7.446+02	1.019+00	2.229+02	1.392+01	2.260+02	9.962+00	1.0
$12g_{7/2}$	2.126+01	7.406+02	1.180+00	2.073+02	1.356+01	2.230+02	7.360+00	1.4
$5g_{9/2}$	1.225+02	1.276+03	2.973+01	3.458+02	9.280+00	1.486+01	1.179+00	0.1
$6g_{9/2}$	8.505+01	1.238+03	1.568+01	8.425+02	1.212+01	1.515+01	1.416+00	0.1
$7g_{9/2}$	6.249+01	9.733+02	1.776+01	3.405+02	1.209+01	1.534+01	1.170+00	0.4
$8g_{9/2}$	4.784+01	9.586+02	8.418+00	3.727+02	1.370+01	2.383+01	2.063+00	0.3
$9g_{9/2}$	3.780+01	9.486+02	1.585+00	2.608+02	1.451+01	1.146+02	8.622+00	0.4
$10g_{9/2}$	3.062+01	7.499+02	1.865+00	2.187+02	1.408+01	1.135+02	6.351+00	0.7
$11g_{9/2}$	2.530+01	7.446+02	2.176+00	1.839+02	1.365+01	1.131+02	4.701+00	1.1
$12g_{9/2}$	2.126+01	7.406+02	2.511+00	1.521+02	1.325+01	1.138+02	3.561+00	1.6
$6h_{9/2}$	8.505+01	8.044+02	3.069+01	1.892+02	1.019+01	1.327+01	9.018–01	0.2
$7h_{9/2}$	6.249+01	7.818+02	1.523+01	1.319+03	1.376+01	1.241+01	1.199+00	0.1
$8h_{9/2}$	4.784+01	6.159+02	1.686+01	6.358+02	1.384+01	1.233+01	1.001+00	0.3
$9h_{9/2}$	3.780+01	6.059+02	6.880+00	9.268+02	1.615+01	2.056+01	1.969+00	0.2
$10h_{9/2}$	3.062+01	5.987+02	3.249+00	5.289+02	1.681+01	4.123+01	3.600+00	0.4
$11h_{9/2}$	2.530+01	4.740+02	1.670+00	3.412+02	1.675+01	8.650+01	5.836+00	0.6
$12h_{9/2}$	2.126+01	4.699+02	1.887+00	2.850+02	1.637+01	8.622+01	4.633+00	0.9
$6h_{11/2}$	8.504+01	8.044+02	2.923+01	2.293+02	1.037+01	1.319+01	9.297–01	0.2
$7h_{11/2}$	6.248+01	7.818+02	1.226+01	1.866+03	1.424+01	1.399+01	1.364+00	0.1
$8h_{11/2}$	4.784+01	6.159+02	1.191+01	1.140+03	1.493+01	1.387+01	1.325+00	0.2
$9h_{11/2}$	3.780+01	6.059+02	8.486+00	8.391+02	1.565+01	1.841+01	1.600+00	0.3

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
10h <sub>11/2</sub>	3.062+01	5.987+02	1.495+00	4.014+02	1.720+01	8.390+01	7.558+00	0.4
11h <sub>11/2</sub>	2.530+01	4.740+02	1.753+00	3.439+02	1.673+01	8.256+01	5.590+00	0.6
12h <sub>11/2</sub>	2.126+01	4.699+02	2.030+00	2.861+02	1.634+01	8.065+01	4.333+00	0.9
7i <sub>11/2</sub>	6.248+01	5.112+02	1.998+01	3.951+02	1.177+01	1.714+01	7.907–01	0.6
8i <sub>11/2</sub>	4.784+01	4.965+02	1.135+01	3.160+03	1.604+01	1.207+01	1.221+00	0.1
9i <sub>11/2</sub>	3.780+01	3.921+02	8.476+00	3.259+03	1.764+01	1.336+01	1.465+00	0.1
10i <sub>11/2</sub>	3.062+01	3.850+02	6.155+00	2.159+03	1.831+01	1.794+01	1.740+00	0.3
11i <sub>11/2</sub>	2.530+01	3.797+02	2.611+00	1.038+03	1.961+01	3.619+01	3.804+00	0.2
12i <sub>11/2</sub>	2.126+01	3.756+02	2.853+00	7.730+02	1.906+01	3.832+01	3.036+00	0.6
7i <sub>13/2</sub>	6.248+01	5.111+02	2.593+01	1.563+02	1.120+01	1.501+01	7.607–01	0.4
8i <sub>13/2</sub>	4.784+01	4.965+02	1.316+01	2.350+03	1.561+01	1.129+01	1.100+00	0.1
9i <sub>13/2</sub>	3.780+01	3.921+02	5.668+00	3.738+03	1.819+01	1.848+01	1.924+00	0.1
10i <sub>13/2</sub>	3.062+01	3.850+02	6.110+00	2.106+03	1.819+01	1.854+01	1.698+00	0.3
11i <sub>13/2</sub>	2.530+01	3.797+02	4.815+00	1.341+03	1.860+01	2.330+01	1.993+00	0.4
12i <sub>13/2</sub>	2.126+01	3.756+02	3.618+00	8.451+02	1.879+01	3.161+01	2.413+00	0.6
Cl <sup>15+</sup>								
1s <sub>1/2</sub>	3.661+03	5.399+04	9.684+01	1.876+02	3.821+00	2.313+01	4.677+00	0.2
2s <sub>1/2</sub>	8.968+02	5.122+04	1.362+02	7.360+00	4.007+00	1.973+01	1.619+00	0.2
3s <sub>1/2</sub>	3.946+02	4.014+04	6.332–01	2.649+03	4.230+00	4.343+03	9.987+01	0.2
4s <sub>1/2</sub>	2.209+02	2.501+04	1.079+00	1.841+03	3.699+00	4.303+03	3.425+01	0.6
5s <sub>1/2</sub>	1.410+02	1.972+04	1.534+00	9.442+02	3.433+00	4.297+03	1.786+01	0.9
6s <sub>1/2</sub>	9.771+01	1.556+04	2.101+00	4.515+02	3.248+00	4.289+03	1.020+01	1.1
7s <sub>1/2</sub>	7.169+01	1.229+04	2.886+00	2.052+02	3.101+00	4.286+03	6.227+00	1.3
8s <sub>1/2</sub>	5.483+01	9.701+03	4.024+00	8.884+01	2.973+00	4.285+03	4.084+00	1.5
9s <sub>1/2</sub>	4.329+01	7.661+03	6.227–02	2.515+05	2.986+00	3.008+05	1.146+02	1.4
10s <sub>1/2</sub>	3.504+01	6.052+03	8.259–02	1.296+05	2.920+00	3.008+05	6.501+01	1.4
11s <sub>1/2</sub>	2.894+01	6.046+03	8.268–02	1.027+05	2.907+00	3.008+05	6.494+01	1.3
12s <sub>1/2</sub>	2.431+01	4.776+03	1.341–01	3.665+04	2.830+00	3.008+05	2.728+01	1.4
2p <sub>1/2</sub>	8.809+02	2.567+04	3.428+01	8.167+02	4.136+00	1.078+02	4.002–01	0.4
3p <sub>1/2</sub>	3.902+02	1.585+04	1.084+01	2.210+02	6.342+00	1.116+02	2.310–02	0.5
4p <sub>1/2</sub>	2.191+02	1.243+04	1.304+01	6.784+01	6.189+00	1.107+02	3.268+00	0.1
5p <sub>1/2</sub>	1.400+02	9.786+03	1.697+01	2.803+01	5.843+00	1.097+02	2.618+00	0.4
6p <sub>1/2</sub>	9.718+01	7.715+03	7.716+00	5.136+01	5.820+00	2.618+02	4.015+00	0.7
7p <sub>1/2</sub>	7.135+01	6.088+03	1.190+00	6.001+02	5.799+00	1.826+03	1.650+01	0.8
8p <sub>1/2</sub>	5.461+01	4.806+03	1.443+00	4.046+02	5.603+00	1.833+03	1.109+01	1.1
9p <sub>1/2</sub>	4.313+01	4.795+03	1.692+00	2.728+02	5.457+00	1.830+03	7.957+00	1.5
10p <sub>1/2</sub>	3.493+01	3.788+03	2.129+00	1.675+02	5.286+00	1.826+03	5.375+00	1.6
11p <sub>1/2</sub>	2.886+01	2.993+03	8.375–02	4.335+04	5.329+00	4.530+04	9.460+01	1.7
12p <sub>1/2</sub>	2.424+01	2.988+03	1.087–01	3.628+04	5.109+00	5.620+04	4.483+01	2.8
2p <sub>3/2</sub>	8.777+02	2.567+04	2.806+01	1.193+03	4.309+00	1.071+02	2.931–01	0.3
3p <sub>3/2</sub>	3.893+02	1.585+04	1.016+01	2.290+02	6.445+00	1.092+02	1.500+00	0.4
4p <sub>3/2</sub>	2.187+02	1.243+04	1.227+01	7.046+01	6.290+00	1.078+02	3.693+00	0.1
5p <sub>3/2</sub>	1.398+02	9.786+03	1.601+01	3.000+01	5.907+00	1.083+02	2.785+00	0.4
6p <sub>3/2</sub>	9.706+01	7.715+03	6.054–01	1.649+03	6.065+00	2.805+03	4.116+01	0.6
7p <sub>3/2</sub>	7.128+01	6.088+03	7.366–01	1.227+03	5.830+00	2.815+03	2.659+01	0.9
8p <sub>3/2</sub>	5.456+01	4.806+03	8.957–01	8.663+02	5.632+00	2.818+03	1.736+01	1.1
9p <sub>3/2</sub>	4.310+01	4.795+03	1.036+00	6.104+02	5.492+00	2.826+03	1.248+01	1.5
10p <sub>3/2</sub>	3.490+01	3.788+03	1.270+00	4.013+02	5.335+00	2.828+03	8.338+00	1.7
11p <sub>3/2</sub>	2.884+01	3.782+03	8.301–02	4.549+04	5.321+00	4.530+04	9.423+01	1.6
12p <sub>3/2</sub>	2.423+01	2.988+03	1.005–01	3.356+04	5.208+00	4.527+04	6.067+01	1.8
3d <sub>3/2</sub>	3.875+02	8.006+03	1.694+01	2.275+03	6.254+00	6.827+01	2.549–01	0.3
4d <sub>3/2</sub>	2.180+02	6.235+03	8.279+00	5.121+02	8.589+00	6.692+01	7.373–01	0.3
5d <sub>3/2</sub>	1.395+02	4.891+03	7.351+00	1.675+02	9.041+00	7.206+01	4.214+00	0.1
6d <sub>3/2</sub>	9.685+01	3.850+03	8.660+00	8.069+01	8.811+00	7.113+01	3.556+00	0.3
7d <sub>3/2</sub>	7.115+01	3.035+03	1.154+01	4.290+01	8.279+00	7.004+01	2.369+00	0.7
8d <sub>3/2</sub>	5.447+01	3.018+03	4.831+00	7.175+01	8.403+00	1.688+02	4.243+00	1.0
9d <sub>3/2</sub>	4.303+01	2.384+03	6.168+00	4.680+01	7.989+00	1.694+02	2.851+00	1.3
10d <sub>3/2</sub>	3.486+01	2.376+03	3.515+00	7.397+01	7.972+00	3.140+02	3.975+00	1.6
11d <sub>3/2</sub>	2.881+01	1.878+03	3.474–02	3.261+04	8.134+00	3.010+04	3.001+02	1.3
12d <sub>3/2</sub>	2.420+01	1.873+03	4.325–02	3.933+04	7.867+00	3.006+04	1.788+02	1.7
3d <sub>5/2</sub>	3.872+02	8.005+03	1.610+01	2.505+03	6.317+00	6.840+01	2.085–01	0.3
4d <sub>5/2</sub>	2.178+02	6.235+03	7.612+00	5.250+02	8.729+00	6.843+01	2.022+00	0.3
5d <sub>5/2</sub>	1.394+02	4.891+03	7.655+00	1.592+02	9.091+00	6.728+01	4.242+00	0.1
6d <sub>5/2</sub>	9.681+01	3.850+03	9.202+00	7.713+01	8.802+00	6.655+01	3.386+00	0.3
7d <sub>5/2</sub>	7.112+01	3.035+03	1.239+01	4.020+01	8.251+00	6.527+01	2.246+00	0.7
8d <sub>5/2</sub>	5.445+01	3.018+03	1.068+00	3.181+02	8.674+00	6.798+02	1.743+01	0.9
9d <sub>5/2</sub>	4.302+01	2.384+03	1.283+00	2.652+02	8.365+00	6.810+02	1.178+01	1.1
10d <sub>5/2</sub>	3.485+01	2.376+03	1.477+00	2.095+02	8.144+00	6.818+02	8.693+00	1.6
11d <sub>5/2</sub>	2.880+01	1.878+03	3.458–02	3.291+04	8.134+00	3.010+04	2.999+02	1.3
12d <sub>5/2</sub>	2.420+01	1.873+03	4.192–02	3.853+04	7.893+00	3.009+04	1.896+02	1.9
4f <sub>5/2</sub>	2.178+02	3.182+03	1.438+01	2.382+03	8.505+00	3.846+01	1.849+00	0.1
5f <sub>5/2</sub>	1.394+02	2.480+03	6.879+00	1.050+03	1.080+01	4.852+01	1.139+00	0.1
6f <sub>5/2</sub>	9.680+01	2.438+03	5.899+00	3.285+02	1.172+01	4.927+01	4.098+00	0.1

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$7f_{5/2}$	7.112+01	1.920+03	6.408+00	1.643+02	1.168+01	4.917+01	3.763+00	0.2
$8f_{5/2}$	5.445+01	1.515+03	2.090+00	1.782+02	1.169+01	1.623+02	9.012+00	0.5
$9f_{5/2}$	4.302+01	1.503+03	2.307+00	1.434+02	1.135+01	1.699+02	7.043+00	0.8
$10f_{5/2}$	3.484+01	1.495+03	2.720+00	1.142+02	1.099+01	1.683+02	5.134+00	1.2
$11f_{5/2}$	2.880+01	1.182+03	3.347+00	8.845+01	1.057+01	1.675+02	3.585+00	1.5
$12f_{5/2}$	2.420+01	1.177+03	8.519–01	2.763+02	1.067+01	6.587+02	1.114+01	1.7
$4f_{7/2}$	2.177+02	3.182+03	1.417+01	2.455+03	8.527+00	3.856+01	1.860+00	0.0
$5f_{7/2}$	1.394+02	2.480+03	5.496+00	1.127+03	1.112+01	5.533+01	2.836+00	0.0
$6f_{7/2}$	9.678+01	2.438+03	5.083+00	3.417+02	1.181+01	5.573+01	4.705+00	0.1
$7f_{7/2}$	7.110+01	1.920+03	5.739+00	1.778+02	1.161+01	5.635+01	3.934+00	0.4
$8f_{7/2}$	5.444+01	1.515+03	6.926+00	1.081+02	1.118+01	5.606+01	2.943+00	0.6
$9f_{7/2}$	4.301+01	1.503+03	8.055+00	7.098+01	1.072+01	5.848+01	2.239+00	1.0
$10f_{7/2}$	3.484+01	1.495+03	8.434–01	2.491+02	1.125+01	4.997+02	1.605+01	1.1
$11f_{7/2}$	2.879+01	1.182+03	1.012+00	2.383+02	1.087+01	4.962+02	1.098+01	1.3
$12f_{7/2}$	2.419+01	1.177+03	1.149+00	2.113+02	1.061+01	4.998+02	8.241+00	1.8
$5g_{7/2}$	1.394+02	1.600+03	3.618+01	2.440+02	9.074+00	1.497+01	1.119+00	0.1
$6g_{7/2}$	9.678+01	1.250+03	2.281+01	5.003+02	1.162+01	1.341+01	1.220+00	0.1
$7g_{7/2}$	7.110+01	1.224+03	1.721+01	4.100+02	1.277+01	1.495+01	1.400+00	0.2
$8g_{7/2}$	5.444+01	1.208+03	9.177+00	3.313+02	1.377+01	2.447+01	2.159+00	0.3
$9g_{7/2}$	4.301+01	9.538+02	8.187+00	2.068+02	1.348+01	3.175+01	2.060+00	0.5
$10g_{7/2}$	3.484+01	9.456+02	8.258–01	2.054+02	1.436+01	2.730+02	1.639+01	0.6
$11g_{7/2}$	2.879+01	7.481+02	9.789–01	2.145+02	1.390+01	2.704+02	1.155+01	0.8
$12g_{7/2}$	2.419+01	7.435+02	1.117+00	1.994+02	1.358+01	2.679+02	8.802+00	1.2
$5g_{9/2}$	1.393+02	1.599+03	3.503+01	2.700+02	9.160+00	1.500+01	1.144+00	0.1
$6g_{9/2}$	9.677+01	1.250+03	1.500+01	9.525+02	1.268+01	1.569+01	1.778+00	0.1
$7g_{9/2}$	7.110+01	1.224+03	1.581+01	4.519+02	1.299+01	1.547+01	1.512+00	0.2
$8g_{9/2}$	5.443+01	1.208+03	1.031+01	3.154+02	1.352+01	2.315+01	1.902+00	0.4
$9g_{9/2}$	4.301+01	9.538+02	5.875+00	2.258+02	1.383+01	4.089+01	2.776+00	0.5
$10g_{9/2}$	3.484+01	9.456+02	3.175+00	1.787+02	1.395+01	7.787+01	4.378+00	0.7
$11g_{9/2}$	2.879+01	7.481+02	3.943+00	1.392+02	1.338+01	7.643+01	3.045+00	1.0
$12g_{9/2}$	2.419+01	7.435+02	4.789+00	1.044+02	1.285+01	7.630+01	2.206+00	1.5
$6h_{9/2}$	9.677+01	1.008+03	3.559+01	1.341+02	9.833+00	1.517+01	8.506–01	0.3
$7h_{9/2}$	7.110+01	7.904+02	1.297+01	1.789+03	1.437+01	1.468+01	1.443+00	0.1
$8h_{9/2}$	5.443+01	7.737+02	1.402+01	8.749+02	1.458+01	1.464+01	1.222+00	0.4
$9h_{9/2}$	4.301+01	6.111+02	9.025+00	7.883+02	1.595+01	1.843+01	1.760+00	0.2
$10h_{9/2}$	3.484+01	6.029+02	1.754+00	3.677+02	1.713+01	8.275+01	7.203+00	0.3
$11h_{9/2}$	2.879+01	5.969+02	1.800+00	2.823+02	1.686+01	8.887+01	6.355+00	0.6
$12h_{9/2}$	2.419+01	5.923+02	2.063+00	2.415+02	1.647+01	8.735+01	4.932+00	0.9
$6h_{11/2}$	9.676+01	1.008+03	3.199+01	1.835+02	9.951+00	1.666+01	8.595–01	0.5
$7h_{11/2}$	7.109+01	7.904+02	1.751+01	1.107+03	1.367+01	1.258+01	1.170+00	0.1
$8h_{11/2}$	5.443+01	7.737+02	1.837+01	6.069+02	1.398+01	1.251+01	1.034+00	0.3
$9h_{11/2}$	4.301+01	6.111+02	5.409+00	8.107+02	1.701+01	2.511+01	3.027+00	0.3
$10h_{11/2}$	3.484+01	6.029+02	4.484+00	4.883+02	1.659+01	3.543+01	2.974+00	0.3
$11h_{11/2}$	2.879+01	5.969+02	5.002+00	3.392+02	1.611+01	3.688+01	2.374+00	0.7
$12h_{11/2}$	2.419+01	5.923+02	5.997+00	2.391+02	1.557+01	3.591+01	1.804+00	1.0
$7i_{11/2}$	7.109+01	6.392+02	3.083+01	1.881+02	1.193+01	1.055+01	8.223–01	0.4
$8i_{11/2}$	5.443+01	5.031+02	1.983+01	1.369+03	1.520+01	8.881+00	9.751–01	0.4
$9i_{11/2}$	4.301+01	4.917+02	7.568+00	3.637+03	1.858+01	1.442+01	1.969+00	0.3
$10i_{11/2}$	3.484+01	4.835+02	9.624+00	1.746+03	1.780+01	1.403+01	1.366+00	0.3
$11i_{11/2}$	2.879+01	3.831+02	4.519+00	1.130+03	1.885+01	2.716+01	2.381+00	0.3
$12i_{11/2}$	2.419+01	3.785+02	1.239+00	3.900+02	1.965+01	9.184+01	7.755+00	0.4
$7i_{13/2}$	7.109+01	6.392+02	1.964+01	1.240+03	1.394+01	1.020+01	1.213+00	0.3
$8i_{13/2}$	5.443+01	5.031+02	1.600+01	2.039+03	1.569+01	1.023+01	1.106+00	0.2
$9i_{13/2}$	4.300+01	4.917+02	1.263+01	1.713+03	1.643+01	1.293+01	1.083+00	0.4
$10i_{13/2}$	3.483+01	4.835+02	6.975+00	1.950+03	1.840+01	1.764+01	1.759+00	0.2
$11i_{13/2}$	2.879+01	3.831+02	5.083+00	1.175+03	1.881+01	2.416+01	2.191+00	0.3
$12i_{13/2}$	2.419+01	3.785+02	3.542+00	7.051+02	1.890+01	3.629+01	2.749+00	0.5
$\text{Cl}^{16+}$								
$1s_{1/2}$	3.947+03	5.427+04	9.051+01	2.537+02	3.764+00	2.369+01	4.450+00	0.2
$2s_{1/2}$	9.878+02	5.131+04	7.152+01	1.600+01	4.739+00	2.380+01	2.857+00	0.3
$3s_{1/2}$	4.386+02	4.019+04	2.993+00	4.641+02	4.077+00	1.039+03	1.807+01	0.4
$4s_{1/2}$	2.465+02	3.164+04	4.402+00	2.162+02	3.686+00	1.034+03	1.224+01	0.7
$5s_{1/2}$	1.577+02	1.974+04	6.924+00	8.523+01	3.352+00	1.024+03	5.870+00	0.9
$6s_{1/2}$	1.095+02	1.557+04	1.037+01	3.248+01	3.112+00	1.025+03	3.431+00	1.2
$7s_{1/2}$	8.041+01	1.229+04	1.198+01	1.820+01	3.006+00	1.025+03	2.716+00	1.6
$8s_{1/2}$	6.155+01	9.708+03	5.812–02	4.724+05	2.990+00	3.008+05	1.148+02	1.7
$9s_{1/2}$	4.862+01	7.667+03	6.559–02	2.980+05	2.953+00	3.008+05	1.146+02	1.4
$10s_{1/2}$	3.938+01	7.658+03	7.486–02	1.926+05	2.913+00	3.008+05	8.776+01	1.5
$11s_{1/2}$	3.254+01	6.049+03	9.996–02	9.627+04	2.855+00	3.008+05	5.034+01	1.4
$12s_{1/2}$	2.734+01	4.779+03	1.338–01	4.662+04	2.808+00	3.008+05	3.030+01	1.3
$2p_{1/2}$	9.878+02	3.238+04	3.003+01	1.267+03	4.269+00	1.084+02	2.921–02	0.6
$3p_{1/2}$	4.386+02	2.002+04	1.031+01	2.268+02	6.529+00	1.107+02	2.760–02	0.5
$4p_{1/2}$	2.465+02	1.246+04	1.243+01	6.844+01	6.407+00	1.074+02	4.139+00	0.1
$5p_{1/2}$	1.577+02	9.804+03	1.620+01	2.981+01	6.016+00	1.079+02	3.095+00	0.4

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$6p_{1/2}$	1.095+02	7.728+03	2.054–01	7.329+03	6.126+00	8.615+03	1.390+02	0.6
$7p_{1/2}$	8.041+01	6.097+03	2.500–01	6.441+03	5.880+00	8.694+03	8.790+01	0.9
$8p_{1/2}$	6.155+01	6.078+03	2.910–01	5.177+03	5.710+00	8.731+03	6.039+01	1.2
$9p_{1/2}$	4.862+01	4.800+03	2.006+00	2.216+02	5.466+00	1.628+03	7.666+00	1.5
$10p_{1/2}$	3.938+01	3.792+03	2.539+00	1.349+02	5.290+00	1.621+03	5.165+00	1.6
$11p_{1/2}$	3.254+01	3.785+03	2.929+00	9.057+01	5.178+00	1.622+03	4.013+00	2.0
$12p_{1/2}$	2.734+01	3.780+03	1.110–01	3.086+04	5.207+00	4.527+04	6.102+01	2.5
$2p_{3/2}$	9.840+02	2.578+04	2.184+01	2.097+03	4.608+00	1.070+02	2.886+00	0.3
$3p_{3/2}$	4.375+02	2.002+04	8.492+00	2.070+02	6.937+00	1.071+02	7.424+00	0.5
$4p_{3/2}$	2.461+02	1.246+04	1.226+01	6.682+01	6.508+00	9.993+01	4.549+00	0.1
$5p_{3/2}$	1.575+02	9.803+03	1.714+01	2.805+01	6.029+00	9.792+01	3.003+00	0.5
$6p_{3/2}$	1.093+02	7.728+03	4.878–01	2.088+03	6.140+00	3.497+03	6.049+01	0.7
$7p_{3/2}$	8.032+01	6.097+03	6.050–01	1.640+03	5.885+00	3.483+03	3.763+01	0.9
$8p_{3/2}$	6.149+01	6.078+03	7.125–01	1.229+03	5.702+00	3.491+03	2.554+01	1.3
$9p_{3/2}$	4.858+01	4.800+03	1.940+00	2.349+02	5.474+00	1.628+03	7.957+00	1.5
$10p_{3/2}$	3.935+01	3.792+03	2.418+00	1.472+02	5.299+00	1.638+03	5.411+00	1.7
$11p_{3/2}$	3.252+01	3.785+03	2.894+00	9.442+01	5.167+00	1.639+03	4.021+00	1.9
$12p_{3/2}$	2.732+01	2.991+03	1.092–01	3.276+04	5.200+00	4.527+04	6.101+01	2.0
$3d_{3/2}$	4.375+02	8.056+03	1.607+01	2.734+03	6.493+00	6.934+01	8.780–02	0.2
$4d_{3/2}$	2.461+02	6.263+03	8.578+00	4.760+02	8.725+00	6.811+01	9.010–02	0.1
$5d_{3/2}$	1.575+02	4.909+03	8.253+00	1.414+02	9.177+00	6.795+01	4.522+00	0.1
$6d_{3/2}$	1.093+02	3.862+03	9.926+00	6.970+01	8.861+00	6.791+01	3.566+00	0.4
$7d_{3/2}$	8.032+01	3.833+03	8.235+00	5.511+01	8.618+00	9.535+01	3.583+00	0.7
$8d_{3/2}$	6.149+01	3.025+03	3.478+00	9.679+01	8.540+00	2.487+02	6.409+00	0.9
$9d_{3/2}$	4.858+01	3.013+03	4.084+00	7.089+01	8.239+00	2.523+02	4.643+00	1.3
$10d_{3/2}$	3.935+01	2.380+03	5.217+00	4.765+01	7.877+00	2.508+02	3.127+00	1.6
$11d_{3/2}$	3.252+01	2.373+03	3.536–01	1.568+03	8.012+00	3.637+03	3.064+01	1.9
$12d_{3/2}$	2.732+01	1.876+03	3.180–02	6.417+04	7.886+00	4.534+04	2.791+02	1.7
$3d_{5/2}$	4.371+02	8.055+03	1.553+01	2.886+03	6.559+00	6.819+01	2.494–01	0.1
$4d_{5/2}$	2.459+02	6.263+03	8.738+00	4.662+02	8.755+00	6.539+01	2.221–01	0.1
$5d_{5/2}$	1.574+02	4.909+03	8.255+00	1.381+02	9.244+00	6.569+01	4.679+00	0.1
$6d_{5/2}$	1.093+02	3.862+03	1.019+01	6.833+01	8.872+00	6.527+01	3.504+00	0.4
$7d_{5/2}$	8.029+01	3.833+03	1.313+01	3.724+01	8.379+00	6.469+01	2.423+00	0.8
$8d_{5/2}$	6.147+01	3.025+03	3.367+00	9.912+01	8.561+00	2.527+02	6.628+00	0.9
$9d_{5/2}$	4.857+01	3.013+03	3.971+00	7.244+01	8.262+00	2.547+02	4.795+00	1.3
$10d_{5/2}$	3.934+01	2.380+03	5.043+00	4.932+01	7.902+00	2.537+02	3.233+00	1.6
$11d_{5/2}$	3.251+01	2.373+03	5.951+00	3.432+01	7.656+00	2.533+02	2.461+00	2.0
$12d_{5/2}$	2.732+01	1.876+03	3.102–02	6.365+04	7.902+00	4.560+04	2.923+02	1.8
$4f_{5/2}$	2.459+02	3.210+03	1.560+01	2.243+03	8.584+00	3.884+01	2.059+00	0.0
$5f_{5/2}$	1.574+02	3.121+03	1.725+01	4.481+02	1.050+01	2.324+01	1.824+00	0.0
$6f_{5/2}$	1.093+02	2.450+03	1.657+01	1.900+02	1.095+01	2.404+01	1.933+00	0.2
$7f_{5/2}$	8.029+01	1.929+03	1.905+01	8.916+01	1.066+01	2.446+01	1.614+00	0.4
$8f_{5/2}$	6.147+01	1.910+03	7.118+00	9.872+01	1.129+01	5.957+01	3.254+00	0.6
$9f_{5/2}$	4.857+01	1.897+03	8.048+00	6.736+01	1.086+01	6.310+01	2.526+00	1.0
$10f_{5/2}$	3.934+01	1.499+03	1.036+00	2.136+02	1.121+01	4.682+02	1.466+01	1.0
$11f_{5/2}$	3.251+01	1.493+03	1.171+00	1.922+02	1.094+01	4.697+02	1.113+01	1.3
$12f_{5/2}$	2.732+01	1.181+03	1.381+00	1.741+02	1.060+01	4.733+02	7.884+00	1.5
$4f_{7/2}$	2.458+02	3.210+03	1.548+01	2.285+03	8.589+00	3.896+01	2.064+00	0.0
$5f_{7/2}$	1.573+02	3.121+03	1.303+01	5.782+02	1.074+01	2.879+01	2.085+00	0.0
$6f_{7/2}$	1.093+02	2.450+03	1.037+01	2.470+02	1.147+01	3.342+01	2.856+00	0.1
$7f_{7/2}$	8.027+01	1.929+03	1.148+01	1.232+02	1.133+01	3.377+01	2.495+00	0.3
$8f_{7/2}$	6.146+01	1.910+03	5.052+00	1.137+02	1.149+01	7.917+01	4.464+00	0.5
$9f_{7/2}$	4.856+01	1.897+03	6.027+00	7.931+01	1.107+01	7.886+01	3.287+00	0.9
$10f_{7/2}$	3.933+01	1.499+03	5.110+00	7.211+01	1.077+01	1.091+02	3.212+00	1.1
$11f_{7/2}$	3.251+01	1.493+03	5.956+00	5.307+01	1.040+01	1.109+02	2.451+00	1.6
$12f_{7/2}$	2.731+01	1.181+03	1.578–01	1.632+03	1.075+01	3.917+03	6.506+01	1.4
$5g_{7/2}$	1.573+02	2.006+03	3.303+01	4.144+02	9.715+00	1.493+01	1.338+00	0.1
$6g_{7/2}$	1.093+02	1.569+03	1.511+01	9.066+02	1.253+01	1.854+01	1.670+00	0.0
$7g_{7/2}$	8.027+01	1.233+03	1.284+01	4.890+02	1.335+01	2.022+01	1.864+00	0.1
$8g_{7/2}$	6.146+01	1.215+03	4.331+00	3.166+02	1.440+01	5.212+01	4.596+00	0.2
$9g_{7/2}$	4.856+01	1.202+03	4.777+00	2.047+02	1.413+01	5.300+01	3.820+00	0.5
$10g_{7/2}$	3.933+01	9.501+02	5.683+00	1.460+02	1.359+01	5.374+01	2.807+00	0.7
$11g_{7/2}$	3.251+01	9.433+02	1.197+00	1.709+02	1.398+01	2.433+02	1.110+01	0.8
$12g_{7/2}$	2.731+01	9.381+02	1.367+00	1.603+02	1.364+01	2.413+02	8.390+00	1.2
$5g_{9/2}$	1.573+02	2.006+03	3.149+01	4.761+02	9.855+00	1.494+01	1.395+00	0.1
$6g_{9/2}$	1.092+02	1.569+03	2.488+01	4.669+02	1.167+01	1.371+01	1.240+00	0.1
$7g_{9/2}$	8.026+01	1.233+03	2.151+01	3.242+02	1.257+01	1.411+01	1.302+00	0.2
$8g_{9/2}$	6.145+01	1.215+03	3.494+00	3.140+02	1.450+01	6.327+01	5.589+00	0.2
$9g_{9/2}$	4.855+01	1.202+03	3.919+00	2.075+02	1.424+01	6.319+01	4.562+00	0.5
$10g_{9/2}$	3.933+01	9.501+02	4.810+00	1.511+02	1.374+01	6.104+01	3.306+00	0.7
$11g_{9/2}$	3.250+01	9.433+02	5.782+00	1.108+02	1.323+01	6.063+01	2.428+00	1.1
$12g_{9/2}$	2.731+01	9.381+02	8.047–01	2.013+02	1.373+01	4.006+02	1.412+01	1.2
$6h_{9/2}$	1.092+02	1.020+03	3.256+01	3.100+02	1.092+01	1.287+01	1.041+00	0.1
$7h_{9/2}$	8.026+01	9.910+02	1.923+01	1.036+03	1.375+01	1.270+01	1.196+00	0.1

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av.}} \%$
$8h_{9/2}$	6.145+01	7.808+02	1.998+01	5.801+02	1.412+01	1.261+01	1.067+00	0.3
$9h_{9/2}$	4.855+01	7.679+02	9.181+00	7.209+02	1.614+01	1.974+01	1.931+00	0.2
$10h_{9/2}$	3.933+01	7.586+02	3.953+00	4.061+02	1.682+01	4.354+01	3.767+00	0.4
$11h_{9/2}$	3.250+01	6.006+02	4.817+00	3.001+02	1.620+01	4.283+01	2.702+00	0.6
$12h_{9/2}$	2.731+01	5.954+02	4.817+00	2.217+02	1.589+01	4.778+01	2.441+00	0.9
$6h_{11/2}$	1.092+02	1.020+03	3.064+01	3.783+02	1.109+01	1.305+01	1.080+00	0.1
$7h_{11/2}$	8.026+01	9.910+02	3.167+01	2.346+02	1.169+01	1.315+01	8.090–01	0.5
$8h_{11/2}$	6.145+01	7.808+02	1.354+01	9.969+02	1.519+01	1.492+01	1.456+00	0.2
$9h_{11/2}$	4.855+01	7.679+02	3.523+00	6.166+02	1.706+01	4.416+01	4.557+00	0.1
$10h_{11/2}$	3.933+01	7.586+02	3.970+00	4.090+02	1.679+01	4.364+01	3.727+00	0.4
$11h_{11/2}$	3.250+01	6.006+02	4.629+00	2.982+02	1.627+01	4.379+01	2.842+00	0.6
$12h_{11/2}$	2.731+01	5.954+02	1.908+00	2.095+02	1.654+01	1.055+02	5.997+00	0.7
$7i_{11/2}$	8.026+01	6.484+02	3.504+01	1.111+02	1.127+01	1.358+01	7.645–01	0.2
$8i_{11/2}$	6.145+01	6.295+02	2.781+01	2.472+02	1.281+01	1.374+01	7.063–01	0.7
$9i_{11/2}$	4.855+01	4.972+02	1.092+01	2.353+03	1.743+01	1.395+01	1.404+00	0.1
$10i_{11/2}$	3.933+01	4.880+02	6.303+00	1.720+03	1.880+01	2.070+01	2.184+00	0.2
$11i_{11/2}$	3.250+01	4.812+02	6.986+00	1.042+03	1.840+01	2.132+01	1.792+00	0.4
$12i_{11/2}$	2.731+01	4.760+02	3.533+00	5.888+02	1.912+01	3.934+01	3.170+00	0.5
$7i_{13/2}$	8.025+01	6.484+02	3.401+01	1.275+02	1.139+01	1.349+01	7.773–01	0.2
$8i_{13/2}$	6.144+01	6.295+02	1.693+01	1.765+03	1.553+01	1.149+01	1.081+00	0.1
$9i_{13/2}$	4.855+01	4.972+02	1.497+01	1.640+03	1.664+01	1.161+01	1.114+00	0.2
$10i_{13/2}$	3.932+01	4.880+02	1.100+01	1.343+03	1.741+01	1.512+01	1.272+00	0.4
$11i_{13/2}$	3.250+01	4.812+02	7.162+00	1.050+03	1.840+01	2.074+01	1.768+00	0.4
$12i_{13/2}$	2.731+01	4.760+02	3.617+00	5.944+02	1.912+01	3.844+01	3.115+00	0.5
$\text{Ar}^{7+}$								
$3s_{1/2}$	1.430+02	2.494+04	1.230+00	9.127+01	4.765+00	1.995+03	6.286–02	1.2
$4s_{1/2}$	7.187+01	1.554+04	2.853–02	3.523+04	4.074+00	1.720+05	2.910+00	2.0
$5s_{1/2}$	4.328+01	1.226+04	4.592–02	2.822+04	3.750+00	1.720+05	1.100+00	2.5
$6s_{1/2}$	2.892+01	7.647+03	1.714–02	1.765+05	3.552+00	7.150+05	1.913+00	2.2
$7s_{1/2}$	2.068+01	6.037+03	2.510–02	9.351+04	3.420+00	7.150+05	1.457+00	2.2
$8s_{1/2}$	1.552+01	4.767+03	3.742–02	4.309+04	3.320+00	7.150+05	1.347+00	2.0
$9s_{1/2}$	1.208+01	4.764+03	5.383–02	1.981+04	3.243+00	7.150+05	1.447+00	2.3
$10s_{1/2}$	9.668+00	3.763+03	1.044–01	5.183+03	3.161+00	7.150+05	1.038+00	2.3
$11s_{1/2}$	7.912+00	2.972+03	2.407–01	9.428+02	3.084+00	7.150+05	3.106+00	2.0
$12s_{1/2}$	6.595+00	2.348+03	2.783–01	5.783+02	3.062+00	7.150+05	4.613+00	2.4
$3p_{1/2}$	1.256+02	9.772+03	2.618+01	2.050+01	6.345+00	5.001+01	1.104–04	0.7
$4p_{1/2}$	6.538+01	7.684+03	7.938+00	2.416+01	6.562+00	1.639+02	5.886–04	0.9
$5p_{1/2}$	4.018+01	4.792+03	1.880+00	6.506+01	6.512+00	7.598+02	7.209–01	0.7
$6p_{1/2}$	2.720+01	3.780+03	2.369+00	4.035+01	6.195+00	7.868+02	3.117+00	1.1
$7p_{1/2}$	1.963+01	3.773+03	3.118+00	2.362+01	5.904+00	7.857+02	2.484+00	1.8
$8p_{1/2}$	1.484+01	2.979+03	2.317–02	2.023+04	5.997+00	1.036+05	1.768+02	1.7
$9p_{1/2}$	1.161+01	2.353+03	2.952–02	1.681+04	5.827+00	1.035+05	1.171+02	2.0
$10p_{1/2}$	9.328+00	2.350+03	3.573–02	1.336+04	5.700+00	1.035+05	8.177+01	3.0
$11p_{1/2}$	7.660+00	1.856+03	5.007–02	8.644+03	5.549+00	1.035+05	4.689+01	3.7
$12p_{1/2}$	6.402+00	1.855+03	5.829–02	6.293+03	5.475+00	1.035+05	3.666+01	4.6
$3p_{3/2}$	1.253+02	9.771+03	2.533+01	2.157+01	6.388+00	4.909+01	3.455–02	0.8
$4p_{3/2}$	6.525+01	6.082+03	7.811+00	2.529+01	6.544+00	1.655+02	8.173–05	0.8
$5p_{3/2}$	4.011+01	4.792+03	1.711+00	7.410+01	6.516+00	8.145+02	1.682–01	0.8
$6p_{3/2}$	2.716+01	3.780+03	2.248+00	4.436+01	6.190+00	8.142+02	3.201+00	1.1
$7p_{3/2}$	1.961+01	3.773+03	2.943+00	2.609+01	5.905+00	8.141+02	2.577+00	1.9
$8p_{3/2}$	1.482+01	2.979+03	3.322–02	1.263+04	5.980+00	7.190+04	1.203+02	1.7
$9p_{3/2}$	1.160+01	2.353+03	4.172–02	1.019+04	5.817+00	7.187+04	8.236+01	2.2
$10p_{3/2}$	9.321+00	2.350+03	5.242–02	7.677+03	5.677+00	7.187+04	5.420+01	2.9
$11p_{3/2}$	7.655+00	1.856+03	6.871–02	5.190+03	5.545+00	7.181+04	3.399+01	3.6
$12p_{3/2}$	6.398+00	1.467+03	9.622–02	2.915+03	5.430+00	7.180+04	2.178+01	4.0
$3d_{3/2}$	1.017+02	3.066+03	7.011+00	1.215+03	5.956+00	2.807+02	3.939+00	1.4
$4d_{3/2}$	5.679+01	2.398+03	8.282+00	2.429+02	6.325+00	2.130+02	5.192–01	0.9
$5d_{3/2}$	3.608+01	1.885+03	6.585+00	1.427+02	6.736+00	2.135+02	9.822–01	0.4
$6d_{3/2}$	2.492+01	1.485+03	6.092+00	8.497+01	6.877+00	2.140+02	1.221+00	0.6
$7d_{3/2}$	1.824+01	1.171+03	4.173+00	9.142+01	7.101+00	2.717+02	1.439+00	1.0
$8d_{3/2}$	1.392+01	1.167+03	1.726+00	2.122+02	7.432+00	5.467+02	2.303+00	0.7
$9d_{3/2}$	1.097+01	9.218+02	2.018+00	1.293+02	7.263+00	5.462+02	1.942+00	0.5
$10d_{3/2}$	8.869+00	9.196+02	2.049+00	9.465+01	7.232+00	5.463+02	1.904+00	1.0
$11d_{3/2}$	7.318+00	7.266+02	6.265–01	4.303+02	7.453+00	1.599+03	4.099+00	0.9
$12d_{3/2}$	6.141+00	7.255+02	7.546–01	2.804+02	7.302+00	1.600+03	3.139+00	1.3
$3d_{5/2}$	1.017+02	3.066+03	6.821+00	1.287+03	5.974+00	2.812+02	4.040+00	1.4
$4d_{5/2}$	5.678+01	2.398+03	4.087+00	7.324+02	6.882+00	2.791+02	9.374–03	1.0
$5d_{5/2}$	3.608+01	1.885+03	4.110+00	2.961+02	7.018+00	2.784+02	1.172–02	0.6
$6d_{5/2}$	2.492+01	1.485+03	3.976+00	1.593+02	7.123+00	2.780+02	1.309+00	0.6
$7d_{5/2}$	1.824+01	1.171+03	4.051+00	9.586+01	7.109+00	2.780+02	1.448+00	0.9
$8d_{5/2}$	1.392+01	1.167+03	1.742+00	2.094+02	7.432+00	5.384+02	2.300+00	0.7
$9d_{5/2}$	1.097+01	9.217+02	2.050+00	1.268+02	7.256+00	5.378+02	1.919+00	0.5
$10d_{5/2}$	8.869+00	9.196+02	2.050+00	9.435+01	7.239+00	5.378+02	1.919+00	1.1
$11d_{5/2}$	7.318+00	7.266+02	4.653–01	6.695+02	7.509+00	2.027+03	5.242+00	0.6

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$12d_{5/2}$	6.141+00	7.255+02	5.666–01	4.393+02	7.352+00	2.029+03	3.841+00	2.4
$4f_{5/2}$	5.451+01	9.653+02	1.350+01	2.364+02	5.048+00	2.788+02	7.412–01	1.5
$5f_{5/2}$	3.489+01	7.542+02	1.822+01	3.915+01	5.191+00	2.802+02	6.010–01	0.8
$6f_{5/2}$	2.423+01	5.923+02	8.960+00	1.375+02	7.594+00	5.854+01	8.073–01	1.0
$7f_{5/2}$	1.780+01	5.859+02	5.179+00	2.138+02	8.815+00	5.762+01	1.068+00	1.4
$8f_{5/2}$	1.363+01	4.623+02	3.665+00	2.182+02	9.391+00	6.491+01	1.319+00	1.0
$9f_{5/2}$	1.077+01	4.594+02	2.836+00	1.995+02	9.604+00	8.024+01	1.521+00	1.0
$10f_{5/2}$	8.719+00	3.631+02	1.541+00	2.800+02	9.961+00	1.337+02	2.233+00	0.5
$11f_{5/2}$	7.206+00	3.616+02	9.571–01	3.596+02	1.007+01	2.131+02	3.049+00	0.7
$12f_{5/2}$	6.054+00	3.604+02	1.059+00	2.630+02	9.905+00	2.123+02	2.559+00	0.9
$4f_{7/2}$	5.450+01	9.653+02	1.352+01	2.356+02	5.043+00	2.794+02	7.321–01	1.5
$5f_{7/2}$	3.489+01	7.542+02	1.824+01	3.905+01	5.189+00	2.798+02	6.010–01	0.9
$6f_{7/2}$	2.423+01	5.923+02	8.942+00	1.382+02	7.596+00	5.854+01	8.070–01	1.0
$7f_{7/2}$	1.780+01	5.859+02	5.203+00	2.139+02	8.796+00	5.758+01	1.049+00	1.4
$8f_{7/2}$	1.363+01	4.623+02	2.840+00	2.955+02	9.627+00	7.711+01	1.537+00	0.9
$9f_{7/2}$	1.077+01	4.594+02	3.017+00	1.868+02	9.537+00	7.725+01	1.446+00	1.1
$10f_{7/2}$	8.719+00	3.631+02	1.848+00	2.319+02	9.842+00	1.166+02	1.945+00	0.5
$11f_{7/2}$	7.205+00	3.616+02	1.352+00	2.542+02	9.865+00	1.653+02	2.261+00	0.8
$12f_{7/2}$	6.054+00	3.604+02	1.474+00	1.830+02	9.720+00	1.649+02	1.975+00	0.9
$5g_{7/2}$	3.483+01	3.892+02	7.151+00	1.417+03	8.635+00	2.588+01	9.599–01	0.4
$6g_{7/2}$	2.419+01	3.785+02	5.789+00	1.426+03	1.078+01	1.810+01	1.014+00	0.4
$7g_{7/2}$	1.777+01	2.976+02	3.982+00	1.452+03	1.229+01	1.931+01	1.303+00	0.2
$8g_{7/2}$	1.361+01	2.935+02	3.157+00	1.037+03	1.286+01	2.274+01	1.509+00	0.4
$9g_{7/2}$	1.075+01	2.318+02	1.976+00	8.179+02	1.319+01	3.660+01	1.988+00	0.6
$10g_{7/2}$	8.709+00	2.297+02	1.662+00	5.958+02	1.316+01	4.632+01	2.168+00	0.9
$11g_{7/2}$	7.197+00	2.282+02	1.442+00	4.640+02	1.306+01	5.740+01	2.265+00	1.2
$12g_{7/2}$	6.048+00	2.271+02	1.344+00	3.713+02	1.288+01	6.738+01	2.208+00	1.6
$5g_{9/2}$	3.483+01	3.892+02	8.647+00	9.200+02	8.836+00	1.852+01	1.135+00	0.7
$6g_{9/2}$	2.419+01	3.785+02	7.406+00	8.852+02	1.040+01	1.546+01	9.685–01	0.5
$7g_{9/2}$	1.777+01	2.976+02	3.924+00	1.558+03	1.251+01	1.825+01	1.374+00	0.4
$8g_{9/2}$	1.361+01	2.935+02	3.295+00	1.009+03	1.281+01	2.194+01	1.469+00	0.5
$9g_{9/2}$	1.075+01	2.318+02	2.851+00	6.679+02	1.278+01	2.757+01	1.498+00	0.6
$10g_{9/2}$	8.709+00	2.297+02	1.726+00	5.858+02	1.311+01	4.516+01	2.092+00	0.9
$11g_{9/2}$	7.197+00	2.282+02	1.602+00	4.395+02	1.298+01	5.245+01	2.080+00	1.2
$12g_{9/2}$	6.048+00	2.271+02	1.334+00	3.705+02	1.292+01	6.682+01	2.248+00	1.5
$6h_{9/2}$	2.419+01	2.452+02	3.380+00	9.887+03	1.210+01	2.073+01	1.277+00	0.2
$7h_{9/2}$	1.777+01	1.923+02	2.437+00	9.866+03	1.485+01	1.773+01	1.716+00	0.1
$8h_{9/2}$	1.361+01	1.882+02	2.388+00	5.264+03	1.553+01	1.760+01	1.692+00	0.3
$9h_{9/2}$	1.075+01	1.853+02	2.764+00	2.577+03	1.516+01	1.788+01	1.360+00	0.7
$10h_{9/2}$	8.708+00	1.466+02	1.905+00	1.905+03	1.574+01	2.473+01	1.766+00	0.6
$11h_{9/2}$	7.197+00	1.451+02	1.798+00	1.262+03	1.559+01	2.856+01	1.743+00	0.9
$12h_{9/2}$	6.048+00	1.439+02	1.399+00	9.427+02	1.568+01	3.789+01	2.030+00	1.3
$6h_{11/2}$	2.419+01	2.452+02	7.357+00	9.511+02	1.007+01	1.765+01	8.640–01	0.6
$7h_{11/2}$	1.777+01	1.923+02	3.810+00	5.744+03	1.403+01	1.333+01	1.283+00	0.1
$8h_{11/2}$	1.361+01	1.882+02	2.956+00	4.794+03	1.532+01	1.458+01	1.493+00	0.2
$9h_{11/2}$	1.075+01	1.853+02	2.962+00	2.675+03	1.527+01	1.595+01	1.342+00	0.6
$10h_{11/2}$	8.708+00	1.466+02	1.970+00	1.883+03	1.567+01	2.427+01	1.705+00	0.6
$11h_{11/2}$	7.197+00	1.451+02	1.610+00	1.298+03	1.574+01	3.100+01	1.917+00	0.9
$12h_{11/2}$	6.047+00	1.439+02	1.735+00	9.039+02	1.548+01	3.143+01	1.697+00	1.1
$7i_{11/2}$	1.777+01	1.556+02	7.653+00	4.260+02	1.087+01	1.631+01	7.270–01	0.7
$8i_{11/2}$	1.361+01	1.225+02	5.313+00	2.277+03	1.374+01	1.227+01	8.065–01	0.5
$9i_{11/2}$	1.075+01	1.196+02	2.492+00	1.081+04	1.744+01	1.338+01	1.390+00	0.2
$10i_{11/2}$	8.708+00	1.176+02	2.308+00	7.330+03	1.790+01	1.430+01	1.405+00	0.4
$11i_{11/2}$	7.197+00	1.161+02	6.411–01	3.482+03	1.948+01	4.313+01	4.163+00	0.5
$12i_{11/2}$	6.047+00	1.149+02	6.985–01	2.490+03	1.928+01	4.284+01	3.663+00	0.7
$7i_{13/2}$	1.777+01	1.556+02	7.534+00	4.542+02	1.092+01	1.636+01	7.311–01	0.7
$8i_{13/2}$	1.361+01	1.225+02	5.989+00	1.335+03	1.306+01	1.305+01	7.373–01	0.6
$9i_{13/2}$	1.075+01	1.196+02	2.404+00	1.114+04	1.752+01	1.370+01	1.426+00	0.2
$10i_{13/2}$	8.708+00	1.176+02	2.014+00	7.262+03	1.797+01	1.643+01	1.518+00	0.4
$11i_{13/2}$	7.197+00	1.161+02	1.288+00	4.717+03	1.869+01	2.436+01	2.120+00	0.6
$12i_{13/2}$	6.047+00	1.149+02	1.351+00	3.136+03	1.854+01	2.492+01	1.974+00	0.8
$\text{Ar}^{15+}$								
$2s_{1/2}$	9.185+02	5.125+04	7.451–01	4.301+02	5.338+00	2.004+03	2.604+00	0.4
$3s_{1/2}$	4.007+02	4.015+04	1.768+00	7.756+02	4.097+00	2.003+03	3.192+00	0.3
$4s_{1/2}$	2.234+02	3.161+04	2.619+00	4.007+02	3.704+00	2.002+03	1.416+01	0.6
$5s_{1/2}$	1.422+02	1.972+04	3.869+00	1.792+02	3.415+00	2.010+03	7.715+00	0.8
$6s_{1/2}$	9.844+01	1.556+04	5.555+00	7.531+01	3.209+00	2.009+03	4.690+00	1.2
$7s_{1/2}$	7.215+01	1.229+04	7.750+00	3.205+01	3.047+00	2.009+03	3.173+00	1.4
$8s_{1/2}$	5.513+01	9.701+03	7.425–04	1.519+09	3.070+00	2.319+07	1.051+04	1.4
$9s_{1/2}$	4.350+01	7.662+03	7.885–04	1.132+09	3.042+00	2.319+07	1.051+04	1.1
$10s_{1/2}$	3.520+01	7.653+03	7.689–04	9.522+08	3.029+00	2.319+07	1.051+04	1.2
$11s_{1/2}$	2.906+01	6.046+03	7.204–04	8.572+08	3.024+00	2.319+07	1.051+04	1.8
$12s_{1/2}$	2.440+01	4.776+03	6.640–02	1.407+05	2.852+00	7.150+05	5.072+01	1.4

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av.}} \%$
$2p_{1/2}$	8.866+02	2.568+04	1.561+02	2.565+01	3.445+00	4.703+01	1.516+00	0.5
$3p_{1/2}$	3.919+02	1.586+04	5.297+01	3.434+01	5.202+00	4.722+01	1.031+00	0.2
$4p_{1/2}$	2.198+02	1.243+04	2.101+01	4.011+01	5.868+00	8.940+01	2.236+00	0.2
$5p_{1/2}$	1.404+02	9.786+03	2.566+01	1.678+01	5.551+00	9.395+01	1.921+00	0.4
$6p_{1/2}$	9.738+01	7.716+03	8.728+00	4.472+01	5.722+00	2.673+02	3.522+00	0.6
$7p_{1/2}$	7.148+01	6.088+03	1.154+01	2.287+01	5.403+00	2.685+02	2.397+00	1.0
$8p_{1/2}$	5.469+01	4.807+03	3.657+00	9.803+01	5.477+00	8.613+02	4.825+00	1.1
$9p_{1/2}$	4.319+01	4.795+03	4.395+00	6.066+01	5.310+00	8.622+02	3.567+00	1.5
$10p_{1/2}$	3.497+01	3.788+03	5.488+00	3.565+01	5.132+00	8.618+02	2.620+00	1.6
$11p_{1/2}$	2.889+01	3.782+03	5.455+00	2.901+01	5.095+00	8.621+02	2.401+00	2.2
$12p_{1/2}$	2.427+01	2.988+03	1.886–02	1.072+06	5.113+00	3.435+05	2.530+02	2.7
$2p_{3/2}$	8.832+02	2.568+04	8.374+01	1.041+02	4.011+00	4.990+01	2.160+00	0.4
$3p_{3/2}$	3.909+02	1.586+04	2.823+01	7.351+01	5.967+00	5.384+01	1.946+00	0.5
$4p_{3/2}$	2.194+02	1.243+04	3.938+01	1.853+01	5.559+00	5.397+01	1.672+00	0.1
$5p_{3/2}$	1.402+02	9.786+03	1.164+00	8.607+02	6.190+00	1.398+03	2.395+01	0.2
$6p_{3/2}$	9.726+01	7.715+03	1.385+00	5.633+02	5.966+00	1.403+03	1.753+01	0.5
$7p_{3/2}$	7.141+01	6.088+03	1.676+00	3.739+02	5.749+00	1.405+03	1.186+01	0.8
$8p_{3/2}$	5.464+01	4.807+03	2.070+00	2.382+02	5.548+00	1.397+03	7.856+00	1.1
$9p_{3/2}$	4.316+01	4.795+03	2.439+00	1.552+02	5.400+00	1.396+03	5.771+00	1.5
$10p_{3/2}$	3.494+01	3.788+03	3.073+00	9.300+01	5.225+00	1.397+03	3.981+00	1.7
$11p_{3/2}$	2.887+01	3.782+03	3.711+00	5.782+01	5.090+00	1.394+03	3.021+00	1.9
$12p_{3/2}$	2.426+01	2.988+03	1.420–02	1.378+06	5.204+00	3.435+05	4.185+02	1.8
$3d_{3/2}$	3.876+02	8.006+03	3.598+00	4.944+04	6.621+00	2.821+02	5.185+00	0.6
$4d_{3/2}$	2.180+02	6.235+03	1.831+00	1.883+03	8.907+00	2.784+02	4.447+00	0.6
$5d_{3/2}$	1.395+02	4.891+03	2.070+00	6.081+02	8.924+00	2.780+02	4.790+00	0.2
$6d_{3/2}$	9.686+01	3.850+03	1.857+00	2.682+02	9.108+00	3.060+02	1.391+01	0.2
$7d_{3/2}$	7.115+01	3.035+03	2.211+00	1.866+02	8.803+00	3.039+02	1.006+01	0.5
$8d_{3/2}$	5.447+01	3.018+03	2.576+00	1.361+02	8.521+00	3.055+02	7.409+00	0.8
$9d_{3/2}$	4.304+01	2.384+03	3.107+00	9.995+01	8.196+00	3.088+02	5.158+00	1.1
$10d_{3/2}$	3.486+01	2.376+03	3.680+00	7.135+01	7.934+00	3.092+02	3.776+00	1.6
$11d_{3/2}$	2.881+01	1.878+03	4.609+00	4.771+01	7.623+00	3.104+02	2.658+00	1.9
$12d_{3/2}$	2.421+01	1.873+03	1.518+00	1.891+02	7.713+00	9.478+02	5.839+00	1.8
$3d_{5/2}$	3.873+02	8.005+03	3.452+00	5.075+04	6.685+00	2.798+02	5.870+00	0.6
$4d_{5/2}$	2.179+02	6.235+03	1.797+00	1.834+03	8.955+00	2.759+02	4.580+00	0.5
$5d_{5/2}$	1.394+02	4.891+03	2.058+00	6.095+02	8.936+00	2.760+02	4.183+00	0.3
$6d_{5/2}$	9.682+01	3.850+03	1.967+00	2.517+02	9.125+00	2.848+02	1.324+01	0.2
$7d_{5/2}$	7.113+01	3.035+03	2.296+00	1.770+02	8.821+00	2.883+02	9.820+00	0.5
$8d_{5/2}$	5.446+01	3.018+03	2.694+00	1.290+02	8.527+00	2.892+02	7.153+00	0.9
$9d_{5/2}$	4.303+01	2.384+03	3.280+00	9.367+01	8.193+00	2.908+02	4.927+00	1.2
$10d_{5/2}$	3.485+01	2.376+03	3.883+00	6.688+01	7.923+00	2.927+02	3.610+00	1.7
$11d_{5/2}$	2.880+01	1.878+03	4.886+00	4.429+01	7.606+00	2.932+02	2.538+00	1.8
$12d_{5/2}$	2.420+01	1.873+03	1.429–01	5.965+03	7.879+00	8.950+03	5.620+01	1.8
$4f_{5/2}$	2.178+02	3.182+03	6.156+00	7.882+03	9.460+00	6.475+01	6.869+00	0.3
$5f_{5/2}$	1.394+02	2.480+03	4.314+00	1.401+03	1.109+01	7.174+01	2.012+00	0.1
$6f_{5/2}$	9.680+01	2.438+03	3.686+00	3.839+02	1.187+01	7.631+01	6.086+00	0.1
$7f_{5/2}$	7.112+01	1.920+03	3.795+00	1.819+02	1.198+01	7.679+01	6.277+00	0.2
$8f_{5/2}$	5.445+01	1.515+03	4.708+00	1.281+02	1.141+01	7.755+01	4.190+00	0.5
$9f_{5/2}$	4.302+01	1.503+03	5.629+00	8.851+01	1.097+01	7.801+01	3.067+00	0.9
$10f_{5/2}$	3.484+01	1.495+03	2.712+00	1.142+02	1.100+01	1.688+02	5.158+00	1.2
$11f_{5/2}$	2.880+01	1.182+03	3.266+00	9.026+01	1.058+01	1.712+02	3.665+00	1.4
$12f_{5/2}$	2.420+01	1.177+03	7.918–01	2.965+02	1.068+01	7.064+02	1.198+01	1.7
$4f_{7/2}$	2.177+02	3.182+03	6.147+00	7.949+03	9.461+00	6.460+01	6.810+00	0.3
$5f_{7/2}$	1.394+02	2.480+03	4.088+00	1.398+03	1.117+01	7.366+01	2.860+00	0.1
$6f_{7/2}$	9.678+01	2.438+03	3.521+00	3.854+02	1.191+01	7.893+01	6.404+00	0.1
$7f_{7/2}$	7.110+01	1.920+03	3.653+00	1.848+02	1.199+01	7.944+01	6.447+00	0.2
$8f_{7/2}$	5.444+01	1.515+03	4.519+00	1.305+02	1.144+01	8.012+01	4.347+00	0.5
$9f_{7/2}$	4.301+01	1.503+03	5.341+00	9.136+01	1.101+01	8.118+01	3.213+00	0.9
$10f_{7/2}$	3.484+01	1.495+03	3.242+00	1.006+02	1.095+01	1.427+02	4.406+00	1.2
$11f_{7/2}$	2.879+01	1.182+03	1.342+00	1.882+02	1.083+01	3.808+02	8.354+00	1.3
$12f_{7/2}$	2.419+01	1.177+03	1.518+00	1.615+02	1.056+01	3.851+02	6.350+00	1.8
$5g_{7/2}$	1.394+02	1.600+03	5.585+00	1.279+04	1.093+01	5.805+01	1.279+00	0.1
$6g_{7/2}$	9.678+01	1.250+03	3.694+00	2.562+03	1.335+01	5.694+01	2.779+00	0.1
$7g_{7/2}$	7.110+01	1.224+03	3.873+00	9.298+02	1.363+01	5.802+01	2.364+00	0.5
$8g_{7/2}$	5.444+01	1.208+03	3.457+00	3.561+02	1.446+01	5.704+01	5.050+00	0.3
$9g_{7/2}$	4.301+01	9.538+02	3.943+00	2.354+02	1.413+01	5.717+01	4.010+00	0.4
$10g_{7/2}$	3.484+01	9.456+02	4.529+00	1.681+02	1.372+01	5.755+01	3.133+00	0.8
$11g_{7/2}$	2.879+01	7.481+02	2.001+00	1.728+02	1.372+01	1.385+02	5.762+00	0.9
$12g_{7/2}$	2.419+01	7.435+02	2.315+00	1.459+02	1.334+01	1.376+02	4.355+00	1.3
$5g_{9/2}$	1.393+02	1.599+03	3.719+00	1.831+04	1.160+01	7.180+01	6.319+00	0.1
$6g_{9/2}$	9.677+01	1.250+03	2.752+00	1.961+03	1.415+01	6.317+01	7.732+00	0.2
$7g_{9/2}$	7.110+01	1.224+03	2.713+00	5.995+02	1.477+01	6.276+01	7.418+00	0.2
$8g_{9/2}$	5.443+01	1.208+03	3.193+00	3.552+02	1.450+01	6.121+01	5.413+00	0.3
$9g_{9/2}$	4.301+01	9.538+02	3.529+00	2.357+02	1.420+01	6.276+01	4.473+00	0.4
$10g_{9/2}$	3.484+01	9.456+02	3.966+00	1.727+02	1.381+01	6.424+01	3.545+00	0.8
$11g_{9/2}$	2.879+01	7.481+02	1.191+00	1.978+02	1.389+01	2.225+02	9.644+00	0.8

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
12g <sub>9/2</sub>	2.419+01	7.435+02	1.366+00	1.821+02	1.354+01	2.213+02	7.255+00	1.2
6h <sub>9/2</sub>	9.677+01	1.008+03	2.666+00	2.489+04	1.418+01	6.518+01	8.109+00	0.2
7h <sub>9/2</sub>	7.110+01	7.904+02	2.237+00	4.924+03	1.587+01	6.505+01	4.762+00	0.0
8h <sub>9/2</sub>	5.443+01	7.737+02	2.216+00	1.640+03	1.648+01	6.545+01	4.427+00	0.3
9h <sub>9/2</sub>	4.301+01	6.111+02	2.384+00	8.300+02	1.653+01	6.557+01	4.336+00	0.5
10h <sub>9/2</sub>	3.484+01	6.029+02	2.227+00	4.013+02	1.703+01	6.628+01	5.718+00	0.3
11h <sub>9/2</sub>	2.879+01	5.969+02	2.495+00	3.071+02	1.670+01	6.597+01	4.627+00	0.6
12h <sub>9/2</sub>	2.419+01	5.923+02	2.870+00	2.506+02	1.626+01	6.547+01	3.570+00	0.9
6h <sub>11/2</sub>	9.676+01	1.008+03	3.305+00	2.589+04	1.354+01	6.104+01	4.007+00	0.0
7h <sub>11/2</sub>	7.109+01	7.904+02	2.503+00	5.796+03	1.546+01	6.339+01	8.642-01	0.1
8h <sub>11/2</sub>	5.443+01	7.737+02	2.218+00	1.542+03	1.658+01	6.400+01	5.040+00	0.3
9h <sub>11/2</sub>	4.301+01	6.111+02	2.330+00	7.599+02	1.673+01	6.407+01	4.946+00	0.4
10h <sub>11/2</sub>	3.484+01	6.029+02	2.437+00	4.503+02	1.677+01	6.416+01	4.880+00	0.5
11h <sub>11/2</sub>	2.879+01	5.969+02	2.566+00	3.091+02	1.669+01	6.430+01	4.511+00	0.6
12h <sub>11/2</sub>	2.419+01	5.923+02	2.964+00	2.495+02	1.627+01	6.327+01	3.495+00	0.9
7i <sub>11/2</sub>	7.109+01	6.392+02	2.400+00	4.709+04	1.568+01	6.327+01	3.327+00	0.0
8i <sub>11/2</sub>	5.443+01	5.031+02	1.814+00	6.030+03	1.886+01	5.376+01	7.620+00	0.2
9i <sub>11/2</sub>	4.301+01	4.917+02	1.891+00	2.477+03	1.929+01	5.351+01	5.631+00	0.0
10i <sub>11/2</sub>	3.484+01	4.835+02	1.950+00	1.236+03	1.954+01	5.360+01	5.390+00	0.2
11i <sub>11/2</sub>	2.879+01	3.831+02	2.012+00	7.293+02	1.966+01	5.365+01	5.281+00	0.2
12i <sub>11/2</sub>	2.419+01	3.785+02	2.240+00	5.636+02	1.933+01	5.341+01	4.322+00	0.4
7i <sub>13/2</sub>	7.109+01	6.392+02	2.513+00	4.659+04	1.555+01	6.206+01	2.496+00	0.1
8i <sub>13/2</sub>	5.443+01	5.031+02	1.831+00	8.704+03	1.813+01	6.077+01	4.686+00	0.0
9i <sub>13/2</sub>	4.300+01	4.917+02	1.662+00	2.529+03	1.919+01	6.206+01	5.733+00	0.1
10i <sub>13/2</sub>	3.483+01	4.835+02	1.718+00	1.242+03	1.943+01	6.216+01	5.555+00	0.3
11i <sub>13/2</sub>	2.879+01	3.831+02	1.805+00	7.502+02	1.946+01	6.240+01	5.400+00	0.4
12i <sub>13/2</sub>	2.419+01	3.785+02	1.853+00	4.947+02	1.951+01	6.255+01	5.285+00	0.4
Ar <sup>16+</sup>								
1s <sub>1/2</sub>	4.124+03	5.445+04	1.124+00	1.227+05	4.052+00	2.007+03	1.307+00	0.2
2s <sub>1/2</sub>	1.012+03	5.134+04	7.801-01	6.041+02	5.232+00	2.007+03	4.333+00	0.3
3s <sub>1/2</sub>	4.453+02	5.077+04	1.811+00	9.471+02	4.051+00	2.007+03	3.959+00	0.4
4s <sub>1/2</sub>	2.493+02	3.164+04	2.555+00	4.868+02	3.697+00	2.027+03	1.800+01	0.6
5s <sub>1/2</sub>	1.591+02	2.495+04	3.674+00	2.269+02	3.420+00	2.020+03	9.596+00	0.9
6s <sub>1/2</sub>	1.103+02	1.557+04	5.503+00	9.139+01	3.192+00	2.020+03	5.235+00	1.1
7s <sub>1/2</sub>	8.092+01	1.229+04	7.854+00	3.750+01	3.024+00	2.019+03	3.380+00	1.3
8s <sub>1/2</sub>	6.189+01	9.708+03	8.495+00	2.417+01	2.960+00	2.020+03	2.876+00	1.7
9s <sub>1/2</sub>	4.886+01	9.695+03	3.660-02	1.014+06	2.931+00	7.125+05	6.152+00	2.1
10s <sub>1/2</sub>	3.955+01	7.658+03	4.838-02	5.118+05	2.876+00	7.125+05	5.914+00	2.0
11s <sub>1/2</sub>	3.267+01	6.049+03	6.657-02	2.342+05	2.827+00	7.125+05	5.629+00	1.9
12s <sub>1/2</sub>	2.744+01	6.044+03	5.670-02	2.415+05	2.843+00	7.126+05	7.290+01	1.6
2p <sub>1/2</sub>	9.946+02	3.239+04	1.585+02	3.088+01	3.416+00	4.707+01	1.460+00	0.5
3p <sub>1/2</sub>	4.406+02	2.002+04	1.104+02	1.190+01	4.692+00	3.083+01	1.110+00	0.2
4p <sub>1/2</sub>	2.474+02	1.246+04	4.965+01	1.444+01	5.551+00	4.537+01	1.606+00	0.2
5p <sub>1/2</sub>	1.581+02	9.804+03	1.649+01	2.972+01	5.898+00	1.240+02	2.911+00	0.3
6p <sub>1/2</sub>	1.097+02	7.728+03	2.214+01	1.357+01	5.499+00	1.245+02	2.008+00	0.8
7p <sub>1/2</sub>	8.056+01	7.699+03	4.969+00	7.634+01	5.700+00	5.249+02	5.237+00	0.9
8p <sub>1/2</sub>	6.165+01	6.078+03	6.358+00	4.399+01	5.450+00	5.241+02	3.536+00	1.3
9p <sub>1/2</sub>	4.869+01	4.801+03	3.020+00	1.174+02	5.397+00	1.236+03	5.310+00	1.4
10p <sub>1/2</sub>	3.943+01	4.791+03	3.606+00	7.468+01	5.253+00	1.234+03	3.954+00	1.7
11p <sub>1/2</sub>	3.258+01	3.786+03	1.285-02	1.581+06	5.313+00	3.438+05	6.590+02	1.7
12p <sub>1/2</sub>	2.737+01	3.780+03	1.264-02	1.267+06	5.314+00	3.438+05	6.590+02	1.8
2p <sub>3/2</sub>	9.906+02	3.238+04	1.416+02	4.177+01	3.465+00	4.686+01	1.382+00	0.2
3p <sub>3/2</sub>	4.394+02	2.002+04	3.630+01	6.402+01	5.728+00	4.940+01	1.198-01	0.2
4p <sub>3/2</sub>	2.469+02	1.246+04	3.827+01	2.025+01	5.802+00	4.945+01	1.904+00	0.2
5p <sub>3/2</sub>	1.579+02	9.804+03	3.357+00	1.970+02	6.264+00	4.832+02	1.134+01	0.3
6p <sub>3/2</sub>	1.096+02	7.728+03	4.268+00	1.168+02	5.956+00	4.794+02	7.387+00	0.6
7p <sub>3/2</sub>	8.047+01	6.097+03	5.501+00	6.777+01	5.669+00	4.769+02	4.775+00	0.9
8p <sub>3/2</sub>	6.159+01	6.078+03	6.803+00	4.011+01	5.443+00	4.777+02	3.375+00	1.4
9p <sub>3/2</sub>	4.865+01	4.801+03	1.072+00	6.375+02	5.483+00	3.133+03	1.328+01	1.4
10p <sub>3/2</sub>	3.940+01	4.791+03	1.230+00	4.458+02	5.369+00	3.128+03	9.859+00	1.7
11p <sub>3/2</sub>	3.256+01	3.785+03	1.277-02	1.671+06	5.304+00	3.438+05	6.590+02	1.6
12p <sub>3/2</sub>	2.735+01	2.991+03	1.239-02	1.376+06	5.306+00	3.438+05	6.590+02	1.3
3d <sub>3/2</sub>	4.375+02	8.056+03	3.624+00	4.772+04	6.782+00	2.821+02	5.077+00	0.4
4d <sub>3/2</sub>	2.461+02	6.263+03	1.872+00	1.546+03	9.065+00	2.854+02	8.041+00	0.4
5d <sub>3/2</sub>	1.575+02	4.909+03	2.130+00	5.065+02	9.063+00	2.855+02	8.234+00	0.2
6d <sub>3/2</sub>	1.093+02	3.862+03	2.130+00	2.207+02	9.167+00	2.916+02	1.406+01	0.2
7d <sub>3/2</sub>	8.033+01	3.833+03	2.500+00	1.533+02	8.879+00	2.904+02	1.047+01	0.5
8d <sub>3/2</sub>	6.149+01	3.025+03	3.026+00	1.142+02	8.530+00	2.907+02	7.172+00	0.8
9d <sub>3/2</sub>	4.858+01	3.013+03	3.523+00	8.499+01	8.244+00	2.956+02	5.232+00	1.2
10d <sub>3/2</sub>	3.935+01	2.380+03	4.367+00	5.921+01	7.922+00	2.956+02	3.624+00	1.5
11d <sub>3/2</sub>	3.252+01	2.373+03	5.154+00	4.160+01	7.677+00	2.971+02	2.736+00	1.9
12d <sub>3/2</sub>	2.733+01	1.876+03	1.641+00	1.744+02	7.735+00	9.712+02	6.154+00	1.8
3d <sub>5/2</sub>	4.372+02	8.055+03	3.477+00	4.965+04	6.834+00	2.820+02	4.768+00	0.3

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$4d_{5/2}$	2.459+02	6.263+03	1.881+00	1.566+03	9.065+00	2.812+02	4.627+00	0.3
$5d_{5/2}$	1.574+02	4.909+03	2.206+00	5.410+02	8.991+00	2.813+02	4.300+00	0.4
$6d_{5/2}$	1.093+02	3.862+03	2.157+00	2.135+02	9.194+00	2.828+02	1.403+01	0.2
$7d_{5/2}$	8.030+01	3.833+03	2.554+00	1.484+02	8.896+00	2.801+02	1.032+01	0.5
$8d_{5/2}$	6.147+01	3.025+03	3.063+00	1.122+02	8.539+00	2.839+02	7.112+00	0.8
$9d_{5/2}$	4.857+01	3.013+03	3.604+00	8.205+01	8.256+00	2.847+02	5.168+00	1.3
$10d_{5/2}$	3.934+01	2.380+03	3.285–01	1.537+03	8.226+00	3.351+03	4.117+01	1.3
$11d_{5/2}$	3.251+01	2.373+03	3.721–01	1.357+03	8.052+00	3.342+03	3.041+01	1.7
$12d_{5/2}$	2.732+01	1.876+03	4.433–01	1.152+03	7.850+00	3.320+03	2.093+01	1.8
$4f_{5/2}$	2.459+02	3.210+03	6.932+00	6.996+03	9.467+00	6.473+01	6.860+00	0.3
$5f_{5/2}$	1.574+02	3.121+03	4.691+00	8.939+02	1.167+01	6.301+01	6.686+00	0.3
$6f_{5/2}$	1.093+02	2.450+03	4.291+00	2.611+02	1.231+01	6.520+01	7.530+00	0.3
$7f_{5/2}$	8.029+01	1.929+03	5.440+00	1.647+02	1.171+01	6.560+01	4.667+00	0.3
$8f_{5/2}$	6.147+01	1.910+03	6.345+00	1.043+02	1.135+01	6.590+01	3.590+00	0.6
$9f_{5/2}$	4.857+01	1.897+03	7.077–01	2.520+02	1.158+01	5.830+02	2.557+01	0.7
$10f_{5/2}$	3.934+01	1.499+03	8.222–01	2.527+02	1.123+01	5.860+02	1.840+01	0.9
$11f_{5/2}$	3.251+01	1.493+03	9.401–01	2.327+02	1.096+01	5.816+02	1.373+01	1.3
$12f_{5/2}$	2.732+01	1.181+03	1.107+00	2.158+02	1.064+01	5.833+02	9.724+00	1.5
$4f_{7/2}$	2.458+02	3.210+03	6.843+00	7.113+03	9.492+00	6.473+01	6.898+00	0.3
$5f_{7/2}$	1.573+02	3.121+03	4.771+00	8.517+02	1.175+01	6.042+01	6.926+00	0.4
$6f_{7/2}$	1.093+02	2.450+03	4.319+00	2.484+02	1.241+01	6.291+01	7.778+00	0.3
$7f_{7/2}$	8.027+01	1.929+03	5.343+00	1.658+02	1.173+01	6.633+01	4.737+00	0.3
$8f_{7/2}$	6.146+01	1.910+03	6.260+00	1.048+02	1.137+01	6.627+01	3.643+00	0.6
$9f_{7/2}$	4.856+01	1.897+03	4.023+00	9.803+01	1.127+01	1.118+02	4.773+00	0.9
$10f_{7/2}$	3.933+01	1.499+03	5.244+00	7.077+01	1.075+01	1.069+02	3.143+00	1.1
$11f_{7/2}$	3.251+01	1.493+03	2.244+00	1.138+02	1.081+01	2.551+02	5.977+00	1.4
$12f_{7/2}$	2.731+01	1.181+03	2.721+00	9.347+01	1.042+01	2.573+02	4.151+00	1.6
$5g_{7/2}$	1.573+02	2.006+03	6.335+00	1.124+04	1.092+01	5.815+01	1.376+00	0.0
$6g_{7/2}$	1.093+02	1.569+03	4.215+00	2.433+03	1.319+01	5.886+01	1.387+00	0.1
$7g_{7/2}$	8.027+01	1.233+03	3.595+00	6.431+02	1.434+01	5.922+01	5.342+00	0.1
$8g_{7/2}$	6.146+01	1.215+03	3.701+00	3.051+02	1.454+01	5.902+01	5.464+00	0.2
$9g_{7/2}$	4.856+01	1.202+03	4.232+00	2.051+02	1.421+01	5.881+01	4.288+00	0.5
$10g_{7/2}$	3.933+01	9.501+02	5.035+00	1.503+02	1.369+01	5.923+01	3.145+00	0.7
$11g_{7/2}$	3.251+01	9.433+02	5.905+00	1.095+02	1.321+01	5.967+01	2.391+00	1.1
$12g_{7/2}$	2.731+01	9.381+02	2.835–01	3.283+02	1.382+01	1.112+03	3.958+01	1.2
$5g_{9/2}$	1.573+02	2.006+03	6.340+00	1.129+04	1.091+01	5.807+01	1.206+00	0.1
$6g_{9/2}$	1.092+02	1.569+03	4.748+00	2.247+03	1.316+01	5.242+01	1.655+00	0.1
$7g_{9/2}$	8.026+01	1.233+03	4.689+00	8.087+02	1.358+01	5.471+01	2.195+00	0.4
$8g_{9/2}$	6.145+01	1.215+03	4.224+00	3.187+02	1.440+01	5.340+01	4.662+00	0.2
$9g_{9/2}$	4.855+01	1.202+03	4.749+00	2.064+02	1.412+01	5.343+01	3.805+00	0.5
$10g_{9/2}$	3.933+01	9.501+02	5.864+00	1.446+02	1.358+01	5.208+01	2.742+00	0.7
$11g_{9/2}$	3.250+01	9.433+02	2.588+00	1.414+02	1.374+01	1.190+02	5.194+00	0.9
$12g_{9/2}$	2.731+01	9.381+02	2.932+00	1.182+02	1.338+01	1.201+02	4.042+00	1.3
$6h_{9/2}$	1.092+02	1.020+03	3.896+00	2.037+04	1.362+01	5.741+01	4.556+00	0.1
$7h_{9/2}$	8.026+01	9.910+02	3.059+00	4.693+03	1.553+01	5.771+01	2.350+00	0.1
$8h_{9/2}$	6.145+01	7.808+02	3.102+00	1.662+03	1.607+01	5.763+01	2.492+00	0.4
$9h_{9/2}$	4.855+01	7.679+02	2.915+00	6.018+02	1.702+01	5.406+01	5.185+00	0.2
$10h_{9/2}$	3.933+01	7.586+02	3.111+00	3.790+02	1.695+01	5.419+01	4.691+00	0.4
$11h_{9/2}$	3.250+01	6.006+02	3.627+00	2.908+02	1.647+01	5.384+01	3.563+00	0.5
$12h_{9/2}$	2.731+01	5.954+02	4.149+00	2.235+02	1.603+01	5.390+01	2.809+00	0.9
$6h_{11/2}$	1.092+02	1.020+03	3.119+00	1.723+04	1.453+01	5.794+01	9.284+00	0.3
$7h_{11/2}$	8.026+01	9.910+02	2.407+00	2.696+03	1.677+01	5.693+01	8.927+00	0.4
$8h_{11/2}$	6.145+01	7.808+02	2.464+00	1.182+03	1.688+01	6.113+01	6.068+00	0.1
$9h_{11/2}$	4.855+01	7.679+02	2.504+00	5.513+02	1.717+01	6.116+01	6.166+00	0.2
$10h_{11/2}$	3.933+01	7.586+02	2.533+00	3.119+02	1.735+01	6.120+01	6.245+00	0.2
$11h_{11/2}$	3.250+01	6.006+02	3.075+00	2.801+02	1.661+01	6.176+01	4.219+00	0.5
$12h_{11/2}$	2.731+01	5.954+02	3.550+00	2.232+02	1.617+01	6.116+01	3.269+00	0.8
$7i_{11/2}$	8.026+01	6.484+02	3.076+00	3.990+04	1.533+01	6.035+01	4.378–01	0.1
$8i_{11/2}$	6.145+01	6.295+02	1.622+00	5.899+03	1.868+01	7.040+01	8.529+00	0.2
$9i_{11/2}$	4.855+01	4.972+02	1.488+00	1.540+03	1.973+01	7.139+01	9.073+00	0.1
$10i_{11/2}$	3.933+01	4.880+02	1.507+00	6.862+02	2.010+01	7.119+01	8.959+00	0.1
$11i_{11/2}$	3.250+01	4.812+02	1.658+00	5.176+02	1.981+01	7.187+01	7.149+00	0.3
$12i_{11/2}$	2.731+01	4.760+02	1.710+00	3.465+02	1.984+01	7.197+01	6.853+00	0.3
$7i_{13/2}$	8.025+01	6.484+02	2.617+00	3.086+04	1.635+01	5.684+01	6.735+00	0.2
$8i_{13/2}$	6.144+01	6.295+02	1.444+00	6.674+03	1.853+01	8.127+01	8.193+00	0.1
$9i_{13/2}$	4.855+01	4.972+02	1.238+00	1.306+03	1.985+01	8.413+01	1.116+01	0.1
$10i_{13/2}$	3.932+01	4.880+02	1.256+00	5.857+02	2.018+01	8.436+01	1.064+01	0.1
$11i_{13/2}$	3.250+01	4.812+02	1.276+00	3.128+02	2.041+01	8.382+01	1.067+01	0.2
$12i_{13/2}$	2.731+01	4.760+02	1.540+00	3.526+02	1.969+01	8.252+01	7.233+00	0.4
$\text{Ar}^{17+}$								
$1s_{1/2}$	4.427+03	5.475+04	1.010+00	1.559+05	4.092+00	2.007+03	1.749–01	0.2
$2s_{1/2}$	1.108+03	5.143+04	8.035–01	7.916+02	5.159+00	2.005+03	1.057+00	0.2
$3s_{1/2}$	4.919+02	5.082+04	1.855+00	1.129+03	4.011+00	2.005+03	1.294+00	0.5
$4s_{1/2}$	2.765+02	3.167+04	2.534+00	5.591+02	3.701+00	2.001+03	2.198+01	0.6

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
5s <sub>1/2</sub>	1.769+02	2.497+04	3.677+00	2.626+02	3.414+00	1.991+03	1.103+01	0.9
6s <sub>1/2</sub>	1.228+02	1.970+04	5.159+00	1.168+02	3.208+00	1.993+03	6.281+00	1.2
7s <sub>1/2</sub>	9.016+01	1.555+04	7.301+00	4.921+01	3.037+00	1.993+03	3.906+00	1.4
8s <sub>1/2</sub>	6.902+01	1.228+04	8.823+00	2.655+01	2.938+00	1.992+03	3.000+00	1.6
9s <sub>1/2</sub>	5.452+01	9.700+03	2.492−01	2.165+04	2.969+00	8.167+04	3.982+01	1.4
10s <sub>1/2</sub>	4.416+01	7.662+03	3.280−01	1.092+04	2.901+00	8.172+04	2.416+01	1.4
11s <sub>1/2</sub>	3.649+01	7.655+03	3.882−01	6.520+03	2.859+00	8.172+04	1.761+01	1.6
12s <sub>1/2</sub>	3.066+01	6.047+03	5.272−01	3.026+03	2.806+00	8.172+04	1.121+01	1.5
2p <sub>1/2</sub>	1.108+03	3.250+04	2.174+02	1.778+01	3.082+00	4.707+01	1.228+00	0.3
3p <sub>1/2</sub>	4.919+02	2.007+04	1.121+02	1.342+01	4.939+00	2.559+01	1.182+00	0.1
4p <sub>1/2</sub>	2.765+02	1.574+04	1.774+01	4.763+01	6.320+00	8.853+01	3.481+00	0.1
5p <sub>1/2</sub>	1.769+02	1.239+04	2.528+01	1.815+01	5.867+00	8.422+01	2.413+00	0.5
6p <sub>1/2</sub>	1.228+02	9.769+03	7.226+00	5.795+01	5.952+00	3.033+02	5.329+00	0.7
7p <sub>1/2</sub>	9.016+01	7.708+03	9.419+00	3.241+01	5.628+00	3.051+02	3.466+00	1.1
8p <sub>1/2</sub>	6.902+01	6.086+03	1.175+00	6.074+02	5.669+00	2.529+03	1.732+01	1.1
9p <sub>1/2</sub>	5.452+01	6.071+03	1.376+00	4.258+02	5.519+00	2.523+03	1.218+01	1.5
10p <sub>1/2</sub>	4.416+01	4.796+03	1.677+00	2.818+02	5.363+00	2.525+03	8.306+00	1.6
11p <sub>1/2</sub>	3.649+01	3.789+03	1.401−02	1.549+06	5.303+00	3.438+05	6.590+02	1.7
12p <sub>1/2</sub>	3.066+01	3.784+03	1.604−02	1.249+06	5.225+00	3.436+05	4.835+02	1.9
2p <sub>3/2</sub>	1.103+03	3.249+04	1.247+02	7.037+01	3.566+00	4.700+01	1.142+00	0.2
3p <sub>3/2</sub>	4.905+02	2.007+04	3.207+01	7.684+01	6.059+00	4.775+01	1.467−01	0.2
4p <sub>3/2</sub>	2.759+02	1.574+04	3.389+01	2.405+01	6.112+00	4.859+01	2.330+00	0.2
5p <sub>3/2</sub>	1.765+02	1.239+04	2.828+00	2.193+02	6.409+00	5.509+02	1.612+01	0.4
6p <sub>3/2</sub>	1.226+02	9.769+03	3.541+00	1.434+02	6.081+00	5.554+02	1.028+01	0.7
7p <sub>3/2</sub>	9.005+01	7.708+03	4.501+00	9.006+01	5.785+00	5.563+02	6.494+00	1.0
8p <sub>3/2</sub>	6.894+01	6.086+03	5.794+00	5.328+01	5.522+00	5.561+02	4.239+00	1.3
9p <sub>3/2</sub>	5.447+01	4.806+03	7.614+00	2.970+01	5.273+00	5.548+02	2.858+00	1.5
10p <sub>3/2</sub>	4.412+01	4.796+03	1.666+00	2.874+02	5.366+00	2.456+03	8.389+00	1.7
11p <sub>3/2</sub>	3.646+01	3.789+03	1.383−02	1.655+06	5.295+00	3.438+05	6.590+02	1.7
12p <sub>3/2</sub>	3.063+01	3.784+03	1.348−02	1.360+06	5.295+00	3.438+05	6.590+02	1.4
3d <sub>3/2</sub>	4.905+02	1.014+04	3.753+00	4.505+04	6.895+00	2.820+02	5.012+00	0.3
4d <sub>3/2</sub>	2.759+02	7.894+03	2.082+00	1.367+03	9.097+00	2.807+02	3.316+00	0.3
5d <sub>3/2</sub>	1.765+02	6.193+03	1.976+00	3.437+02	9.425+00	2.975+02	1.764+01	0.1
6d <sub>3/2</sub>	1.226+02	4.874+03	2.128+00	1.713+02	9.379+00	2.975+02	1.762+01	0.2
7d <sub>3/2</sub>	9.005+01	3.843+03	2.713+00	1.372+02	8.912+00	2.939+02	1.087+01	0.5
8d <sub>3/2</sub>	6.894+01	3.822+03	3.188+00	1.027+02	8.604+00	2.951+02	7.813+00	0.9
9d <sub>3/2</sub>	5.447+01	3.018+03	3.937+00	7.524+01	8.257+00	2.936+02	5.277+00	1.2
10d <sub>3/2</sub>	4.412+01	3.008+03	4.632+00	5.435+01	7.996+00	2.944+02	3.898+00	1.6
11d <sub>3/2</sub>	3.646+01	2.377+03	1.096−02	2.386+05	8.068+00	1.273+05	1.124+03	1.5
12d <sub>3/2</sub>	3.063+01	2.372+03	1.064−02	1.831+05	8.085+00	1.273+05	1.124+03	1.4
3d <sub>5/2</sub>	4.900+02	1.014+04	3.565+00	4.701+04	6.960+00	2.826+02	4.784+00	0.3
4d <sub>5/2</sub>	2.757+02	7.894+03	2.012+00	1.339+03	9.152+00	2.817+02	3.912+00	0.2
5d <sub>5/2</sub>	1.764+02	6.193+03	1.925+00	3.239+02	9.497+00	2.950+02	1.903+01	0.1
6d <sub>5/2</sub>	1.225+02	4.874+03	2.060+00	1.605+02	9.462+00	2.950+02	1.891+01	0.2
7d <sub>5/2</sub>	9.002+01	3.843+03	2.708+00	1.337+02	8.944+00	2.879+02	1.106+01	0.5
8d <sub>5/2</sub>	6.892+01	3.822+03	3.211+00	1.004+02	8.624+00	2.878+02	7.838+00	0.9
9d <sub>5/2</sub>	5.445+01	3.018+03	3.967+00	7.414+01	8.267+00	2.875+02	5.267+00	1.2
10d <sub>5/2</sub>	4.410+01	3.008+03	4.698+00	5.346+01	7.997+00	2.878+02	3.846+00	1.6
11d <sub>5/2</sub>	3.645+01	2.377+03	1.090−02	2.422+05	8.067+00	1.273+05	1.124+03	1.6
12d <sub>5/2</sub>	3.063+01	2.372+03	1.218−02	2.632+05	7.928+00	1.271+05	8.526+02	1.7
4f <sub>5/2</sub>	2.757+02	4.029+03	7.821+00	6.172+03	9.458+00	6.471+01	6.887+00	0.3
5f <sub>5/2</sub>	1.764+02	3.140+03	5.255+00	9.822+02	1.133+01	6.956+01	4.520+00	0.1
6f <sub>5/2</sub>	1.225+02	3.087+03	5.371+00	3.041+02	1.174+01	6.888+01	5.063+00	0.1
7f <sub>5/2</sub>	9.002+01	2.431+03	5.953+00	1.554+02	1.162+01	6.935+01	4.515+00	0.4
8f <sub>5/2</sub>	6.892+01	1.918+03	6.716+00	9.569+01	1.136+01	6.984+01	3.770+00	0.5
9f <sub>5/2</sub>	5.445+01	1.903+03	8.071+00	6.461+01	1.090+01	7.018+01	2.756+00	0.9
10f <sub>5/2</sub>	4.410+01	1.893+03	7.722−02	1.406+03	1.136+01	6.668+03	2.206+02	1.0
11f <sub>5/2</sub>	3.645+01	1.497+03	9.070−02	1.998+03	1.104+01	6.612+03	1.547+02	1.1
12f <sub>5/2</sub>	3.063+01	1.491+03	1.016−01	2.279+03	1.082+01	6.569+03	1.180+02	1.5
4f <sub>7/2</sub>	2.756+02	4.029+03	7.720+00	6.310+03	9.472+00	6.491+01	6.899+00	0.3
5f <sub>7/2</sub>	1.764+02	3.140+03	7.117+00	8.685+02	1.112+01	5.413+01	2.976+00	0.1
6f <sub>7/2</sub>	1.225+02	3.086+03	6.651+00	2.682+02	1.178+01	5.439+01	4.554+00	0.1
7f <sub>7/2</sub>	9.000+01	2.431+03	7.188+00	1.352+02	1.173+01	5.478+01	4.169+00	0.2
8f <sub>7/2</sub>	6.890+01	1.918+03	9.064+00	8.369+01	1.117+01	5.445+01	2.866+00	0.5
9f <sub>7/2</sub>	5.444+01	1.903+03	2.058+00	1.332+02	1.146+01	2.328+02	1.001+01	0.7
10f <sub>7/2</sub>	4.410+01	1.893+03	2.367+00	1.115+02	1.114+01	2.322+02	7.512+00	1.1
11f <sub>7/2</sub>	3.644+01	1.497+03	2.828+00	9.427+01	1.075+01	2.335+02	5.288+00	1.3
12f <sub>7/2</sub>	3.062+01	1.491+03	3.252+00	7.583+01	1.046+01	2.343+02	4.023+00	1.7
5g <sub>7/2</sub>	1.764+02	2.025+03	7.206+00	9.841+03	1.089+01	5.796+01	1.209+00	0.0
6g <sub>7/2</sub>	1.225+02	1.583+03	4.653+00	2.245+03	1.313+01	6.070+01	6.499−02	0.1
7g <sub>7/2</sub>	9.000+01	1.550+03	3.829+00	5.814+02	1.433+01	6.256+01	5.519+00	0.1
8g <sub>7/2</sub>	6.890+01	1.529+03	3.758+00	2.514+02	1.473+01	6.238+01	6.330+00	0.1
9g <sub>7/2</sub>	5.444+01	1.208+03	4.497+00	1.867+02	1.418+01	6.283+01	4.422+00	0.4
10g <sub>7/2</sub>	4.410+01	1.197+03	5.163+00	1.347+02	1.381+01	6.263+01	3.476+00	0.7

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
11g <sub>7/2</sub>	3.644+01	9.472+02	6.533+00	9.834+01	1.319+01	6.126+01	2.398+00	0.9
12g <sub>7/2</sub>	3.062+01	9.414+02	2.696+00	1.155+02	1.343+01	1.455+02	4.837+00	1.1
5g <sub>9/2</sub>	1.764+02	2.025+03	7.140+00	9.955+03	1.091+01	5.801+01	1.334+00	0.0
6g <sub>9/2</sub>	1.225+02	1.583+03	4.734+00	2.216+03	1.314+01	5.941+01	3.850–01	0.1
7g <sub>9/2</sub>	8.999+01	1.550+03	3.965+00	5.768+02	1.434+01	6.019+01	5.392+00	0.1
8g <sub>9/2</sub>	6.890+01	1.529+03	3.929+00	2.572+02	1.468+01	6.025+01	6.004+00	0.1
9g <sub>9/2</sub>	5.444+01	1.208+03	4.504+00	1.858+02	1.420+01	6.240+01	4.448+00	0.4
10g <sub>9/2</sub>	4.409+01	1.197+03	5.221+00	1.349+02	1.380+01	6.201+01	3.425+00	0.7
11g <sub>9/2</sub>	3.644+01	9.472+02	6.403+00	9.936+01	1.320+01	6.225+01	2.441+00	0.9
12g <sub>9/2</sub>	3.062+01	9.414+02	1.599+00	1.413+02	1.361+01	2.333+02	8.069+00	1.1
6h <sub>9/2</sub>	1.225+02	1.276+03	4.379+00	1.799+04	1.363+01	5.707+01	4.507+00	0.1
7h <sub>9/2</sub>	8.999+01	1.001+03	3.254+00	4.559+03	1.541+01	6.250+01	1.071+00	0.1
8h <sub>9/2</sub>	6.890+01	9.797+02	3.038+00	1.085+03	1.682+01	5.628+01	5.517+00	0.0
9h <sub>9/2</sub>	5.444+01	7.738+02	3.092+00	5.135+02	1.710+01	5.631+01	5.607+00	0.1
10h <sub>9/2</sub>	4.409+01	7.634+02	3.111+00	2.914+02	1.730+01	5.634+01	5.688+00	0.2
11h <sub>9/2</sub>	3.644+01	7.558+02	4.330+00	2.572+02	1.651+01	4.988+01	3.439+00	0.6
12h <sub>9/2</sub>	3.062+01	7.499+02	5.002+00	1.978+02	1.603+01	4.986+01	2.661+00	0.9
6h <sub>11/2</sub>	1.225+02	1.276+03	4.400+00	1.797+04	1.361+01	5.710+01	4.529+00	0.1
7h <sub>11/2</sub>	8.998+01	1.001+03	2.955+00	3.506+03	1.602+01	6.037+01	5.444+00	0.1
8h <sub>11/2</sub>	6.889+01	9.797+02	2.907+00	1.146+03	1.671+01	6.016+01	5.280+00	0.1
9h <sub>11/2</sub>	5.443+01	7.737+02	3.039+00	5.641+02	1.687+01	6.025+01	5.172+00	0.3
10h <sub>11/2</sub>	4.409+01	7.634+02	3.143+00	3.312+02	1.695+01	6.030+01	5.118+00	0.3
11h <sub>11/2</sub>	3.644+01	7.558+02	3.109+00	2.416+02	1.671+01	6.699+01	4.704+00	0.6
12h <sub>11/2</sub>	3.062+01	7.499+02	3.488+00	1.932+02	1.635+01	6.676+01	3.802+00	0.8
7i <sub>11/2</sub>	8.998+01	8.093+02	3.247+00	3.109+04	1.580+01	5.767+01	4.280+00	0.0
8i <sub>11/2</sub>	6.889+01	6.370+02	2.574+00	6.866+03	1.805+01	5.559+01	4.127+00	0.0
9i <sub>11/2</sub>	5.443+01	6.225+02	2.303+00	2.215+03	1.899+01	5.881+01	4.809+00	0.1
10i <sub>11/2</sub>	4.409+01	6.122+02	2.444+00	1.149+03	1.912+01	5.874+01	4.451+00	0.5
11i <sub>11/2</sub>	3.644+01	4.851+02	2.600+00	6.994+02	1.911+01	5.875+01	4.325+00	0.5
12i <sub>11/2</sub>	3.062+01	4.793+02	2.665+00	4.511+02	1.920+01	5.859+01	4.389+00	0.5
7i <sub>13/2</sub>	8.997+01	8.093+02	3.185+00	3.072+04	1.589+01	5.768+01	4.689+00	0.1
8i <sub>13/2</sub>	6.889+01	6.370+02	2.033+00	5.260+03	1.867+01	6.295+01	7.696+00	0.2
9i <sub>13/2</sub>	5.443+01	6.225+02	1.671+00	1.030+03	2.021+01	6.570+01	1.078+01	0.3
10i <sub>13/2</sub>	4.409+01	6.122+02	1.669+00	4.525+02	2.064+01	6.573+01	1.044+01	0.4
11i <sub>13/2</sub>	3.644+01	4.851+02	2.042+00	5.000+02	1.973+01	6.636+01	6.505+00	0.2
12i <sub>13/2</sub>	3.062+01	4.793+02	2.080+00	3.238+02	1.983+01	6.640+01	6.402+00	0.3
Ti <sup>3+</sup>								
4s <sub>1/2</sub>	3.255+01	1.550+04	2.548+00	8.141+00	4.614+00	1.600+03	1.037–03	1.5
5s <sub>1/2</sub>	1.667+01	9.663+03	1.466–01	2.469+02	4.292+00	4.000+04	2.727–04	3.1
6s <sub>1/2</sub>	1.018+01	6.027+03	3.047–01	1.026+02	3.957+00	4.000+04	4.378–04	3.8
7s <sub>1/2</sub>	6.871+00	4.759+03	1.005+00	1.818+01	3.610+00	3.800+04	4.631–05	5.3
8s <sub>1/2</sub>	4.950+00	3.758+03	7.376–01	2.245+01	3.512+00	1.140+05	5.893–05	5.4
9s <sub>1/2</sub>	3.736+00	2.968+03	5.475–01	2.781+01	3.451+00	3.500+05	4.487–05	5.1
10s <sub>1/2</sub>	2.920+00	2.344+03	3.948–01	3.614+01	3.429+00	7.100+05	3.329–05	5.1
11s <sub>1/2</sub>	2.345+00	2.343+03	2.746–01	5.078+01	3.426+00	8.100+05	6.763–05	5.3
12s <sub>1/2</sub>	1.925+00	1.851+03	2.235–01	5.857+01	3.389+00	4.600+06	4.765–05	5.4
4p <sub>1/2</sub>	2.679+01	7.645+03	2.391+01	1.580+00	8.235+00	3.194+01	7.976–01	1.6
5p <sub>1/2</sub>	1.444+01	4.766+03	1.498+01	6.489–01	8.216+00	5.446+01	1.273+00	1.1
6p <sub>1/2</sub>	9.083+00	3.762+03	1.085+01	3.467–01	8.150+00	8.071+01	1.727+00	1.4
7p <sub>1/2</sub>	6.250+00	2.347+03	8.391+00	2.114–01	8.100+00	1.109+02	2.205+00	1.8
8p <sub>1/2</sub>	4.565+00	1.853+03	6.820+00	1.389–01	8.093+00	1.407+02	2.713+00	1.8
9p <sub>1/2</sub>	3.481+00	1.852+03	5.774+00	9.612–02	8.118+00	1.652+02	3.223+00	1.9
10p <sub>1/2</sub>	2.743+00	1.463+03	5.465+00	6.749–02	8.184+00	1.660+02	3.441+00	1.6
11p <sub>1/2</sub>	2.217+00	1.155+03	5.289+00	4.958–02	8.220+00	1.659+02	3.566+00	1.6
12p <sub>1/2</sub>	1.829+00	1.155+03	4.320+00	3.788–02	8.181+00	2.188+02	4.424+00	2.0
4p <sub>3/2</sub>	2.669+01	7.645+03	2.312+01	1.663+00	8.248+00	3.195+01	8.078–01	1.5
5p <sub>3/2</sub>	1.440+01	4.766+03	1.433+01	6.854–01	8.218+00	5.539+01	1.298+00	1.0
6p <sub>3/2</sub>	9.064+00	3.762+03	1.027+01	3.690–01	8.147+00	8.321+01	1.775+00	1.4
7p <sub>3/2</sub>	6.239+00	2.347+03	7.858+00	2.271–01	8.093+00	1.159+02	2.284+00	1.8
8p <sub>3/2</sub>	4.558+00	1.853+03	6.277+00	1.503–01	8.086+00	1.495+02	2.855+00	1.8
9p <sub>3/2</sub>	3.477+00	1.852+03	5.265+00	1.052–01	8.101+00	1.784+02	3.411+00	1.9
10p <sub>3/2</sub>	2.739+00	1.463+03	4.978+00	7.369–02	8.174+00	1.783+02	3.649+00	1.5
11p <sub>3/2</sub>	2.214+00	1.155+03	4.006+00	5.518–02	8.154+00	2.347+02	4.594+00	1.3
12p <sub>3/2</sub>	1.827+00	1.155+03	3.932+00	4.149–02	8.177+00	2.347+02	4.688+00	2.6
3d <sub>3/2</sub>	4.316+01	2.384+03	2.405+01	1.108+02	6.988+00	3.845+01	4.782–01	2.2
4d <sub>3/2</sub>	1.839+01	1.867+03	8.058+00	3.827+01	9.029+00	5.225+01	3.220–01	1.7
5d <sub>3/2</sub>	1.095+01	1.860+03	4.952+00	1.970+01	9.336+00	8.070+01	3.916–01	1.3
6d <sub>3/2</sub>	7.285+00	1.467+03	3.482+00	1.199+01	9.491+00	1.103+02	5.533–01	0.7
7d <sub>3/2</sub>	5.200+00	1.465+03	2.599+00	8.019+00	9.576+00	1.453+02	7.148–01	0.7
8d <sub>3/2</sub>	3.899+00	1.157+03	2.003+00	5.708+00	9.660+00	1.829+02	8.923–01	0.3
9d <sub>3/2</sub>	3.032+00	1.156+03	1.641+00	4.272+00	9.670+00	2.259+02	1.060+00	0.8
10d <sub>3/2</sub>	2.425+00	1.156+03	1.360+00	3.302+00	9.703+00	2.698+02	1.250+00	0.9
11d <sub>3/2</sub>	1.984+00	9.128+02	1.163+00	2.627+00	9.700+00	3.220+02	1.421+00	1.3
12d <sub>3/2</sub>	1.653+00	9.124+02	1.001+00	2.129+00	9.731+00	3.665+02	1.623+00	1.6
3d <sub>5/2</sub>	4.310+01	2.384+03	2.629+01	8.526+01	6.395+00	5.796+01	4.645–01	1.9

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$4d_{5/2}$	1.838+01	1.867+03	7.494+00	3.826+01	9.011+00	5.894+01	5.662–04	1.7
$5d_{5/2}$	1.094+01	1.471+03	4.829+00	2.002+01	9.384+00	8.007+01	3.816–01	0.7
$6d_{5/2}$	7.282+00	1.467+03	3.436+00	1.215+01	9.494+00	1.112+02	5.597–01	0.7
$7d_{5/2}$	5.199+00	1.465+03	2.556+00	8.139+00	9.581+00	1.466+02	7.289–01	0.6
$8d_{5/2}$	3.898+00	1.157+03	1.983+00	5.815+00	9.645+00	1.857+02	9.090–01	0.4
$9d_{5/2}$	3.031+00	1.156+03	1.581+00	4.344+00	9.699+00	2.284+02	1.105+00	0.3
$10d_{5/2}$	2.425+00	1.156+03	1.340+00	3.382+00	9.685+00	2.764+02	1.273+00	0.4
$11d_{5/2}$	1.984+00	9.128+02	1.108+00	2.681+00	9.737+00	3.252+02	1.507+00	0.8
$12d_{5/2}$	1.653+00	9.124+02	9.608–01	2.187+00	9.739+00	3.776+02	1.704+00	1.6
$4f_{5/2}$	1.374+01	3.681+02	1.975+00	4.749+00	1.352+01	4.522+01	2.722+01	1.0
$5f_{5/2}$	8.810+00	2.887+02	9.316–01	7.344–01	1.498+01	7.591+01	6.029+01	1.2
$6f_{5/2}$	6.117+00	2.272+02	3.187+00	1.445+02	5.937+00	1.331+04	6.642–01	0.9
$7f_{5/2}$	4.491+00	2.255+02	3.033+00	9.741+01	6.068+00	1.331+04	6.331–01	1.4
$8f_{5/2}$	3.435+00	1.780+02	2.405+00	4.032–02	1.388+01	8.399+01	4.280+01	1.9
$9f_{5/2}$	2.712+00	1.773+02	2.537+00	2.495–02	1.387+01	8.394+01	4.234+01	1.8
$10f_{5/2}$	2.195+00	1.401+02	2.604+00	1.830–02	1.384+01	8.488+01	4.069+01	1.0
$11f_{5/2}$	1.813+00	1.397+02	2.794+00	1.155–02	1.380+01	8.486+01	4.065+01	1.0
$12f_{5/2}$	1.523+00	1.394+02	2.636+00	1.155–02	1.381+01	8.791+01	3.761+01	1.5
$4f_{7/2}$	1.374+01	3.681+02	1.680+00	4.375+00	1.349+01	5.424+01	3.237+01	0.9
$5f_{7/2}$	8.810+00	2.887+02	9.349–01	7.279–01	1.497+01	7.588+01	6.031+01	1.2
$6f_{7/2}$	6.117+00	2.272+02	3.188+00	1.446+02	5.936+00	1.331+04	6.627–01	0.8
$7f_{7/2}$	4.491+00	2.255+02	3.029+00	9.786+01	6.068+00	1.331+04	6.328–01	1.5
$8f_{7/2}$	3.435+00	1.780+02	2.365+00	4.076–02	1.389+01	8.454+01	4.329+01	1.9
$9f_{7/2}$	2.712+00	1.773+02	2.489+00	2.540–02	1.389+01	8.449+01	4.280+01	1.8
$10f_{7/2}$	2.195+00	1.401+02	2.253+00	1.717–02	1.384+01	9.813+01	4.711+01	1.0
$11f_{7/2}$	1.813+00	1.397+02	2.403+00	1.088–02	1.380+01	9.801+01	4.738+01	0.9
$12f_{7/2}$	1.523+00	1.394+02	2.397+00	9.252–03	1.379+01	9.985+01	4.483+01	0.6
$5g_{7/2}$	8.710+00	1.176+02	8.765+00	5.530–01	1.416+01	9.893+00	9.881+00	0.2
$6g_{7/2}$	6.049+00	1.149+02	6.038+00	1.882+00	1.620+01	8.497+00	1.293+01	0.4
$7g_{7/2}$	4.444+00	9.044+01	6.257+00	1.299+00	1.666+01	8.118+00	1.285+01	0.3
$8g_{7/2}$	3.403+00	8.940+01	6.785+00	6.921–01	1.670+01	8.088+00	1.264+01	0.2
$9g_{7/2}$	2.689+00	7.061+01	7.173+00	3.627–01	1.661+01	8.378+00	1.265+01	0.2
$10g_{7/2}$	2.178+00	7.010+01	7.452+00	2.286–01	1.659+01	8.445+00	1.260+01	0.2
$11g_{7/2}$	1.800+00	6.972+01	7.911+00	1.364–01	1.652+01	8.472+00	1.260+01	0.3
$12g_{7/2}$	1.512+00	6.943+01	9.163+00	7.859–02	1.643+01	7.852+00	1.213+01	0.7
$5g_{9/2}$	8.710+00	1.176+02	7.798+00	6.129–01	1.420+01	1.089+01	1.105+01	0.1
$6g_{9/2}$	6.049+00	1.149+02	4.047+00	1.627+00	1.626+01	1.226+01	1.911+01	0.3
$7g_{9/2}$	4.444+00	9.044+01	4.059+00	9.404–01	1.669+01	1.228+01	1.989+01	0.2
$8g_{9/2}$	3.403+00	8.940+01	4.333+00	5.014–01	1.673+01	1.239+01	1.971+01	0.1
$9g_{9/2}$	2.688+00	7.061+01	4.543+00	2.845–01	1.669+01	1.268+01	1.968+01	0.1
$10g_{9/2}$	2.178+00	7.010+01	4.770+00	1.687–01	1.662+01	1.292+01	1.964+01	0.2
$11g_{9/2}$	1.800+00	6.972+01	5.436+00	1.015–01	1.654+01	1.218+01	1.868+01	0.4
$12g_{9/2}$	1.512+00	6.943+01	5.802+00	5.813–02	1.645+01	1.220+01	1.928+01	0.7
$6h_{9/2}$	6.047+00	5.969+01	3.890+01	6.190–02	1.562+01	1.838+00	2.157+00	0.6
$7h_{9/2}$	4.443+00	5.808+01	1.923+01	2.836+00	1.803+01	1.914+00	4.465+00	0.5
$8h_{9/2}$	3.402+00	5.704+01	1.889+01	4.770+00	1.873+01	1.799+00	4.544+00	0.6
$9h_{9/2}$	2.688+00	4.505+01	1.842+01	3.626+00	1.896+01	1.867+00	4.917+00	0.2
$10h_{9/2}$	2.177+00	4.454+01	1.784+01	2.946+00	1.910+01	1.943+00	5.038+00	0.2
$11h_{9/2}$	1.799+00	4.416+01	1.758+01	2.216+00	1.913+01	2.029+00	4.960+00	0.5
$12h_{9/2}$	1.512+00	4.388+01	2.449+01	1.049+00	1.903+01	1.565+00	4.644+00	0.3
$6h_{11/2}$	6.047+00	5.969+01	2.722+01	1.153–01	1.588+01	2.215+00	3.582+00	0.3
$7h_{11/2}$	4.443+00	5.808+01	2.384+01	2.669+00	1.792+01	1.623+00	3.447+00	0.6
$8h_{11/2}$	3.402+00	5.704+01	2.203+01	5.047+00	1.867+01	1.586+00	3.759+00	0.6
$9h_{11/2}$	2.688+00	4.505+01	2.173+01	3.964+00	1.891+01	1.622+00	4.050+00	0.3
$10h_{11/2}$	2.177+00	4.454+01	2.033+01	3.261+00	1.906+01	1.742+00	4.254+00	0.3
$11h_{11/2}$	1.799+00	4.416+01	2.373+01	1.968+00	1.904+01	1.569+00	4.067+00	0.1
$12h_{11/2}$	1.512+00	4.388+01	2.836+01	1.339+00	1.899+01	1.382+00	3.597+00	0.2
$7i_{11/2}$	4.443+00	3.790+01	2.613–01	1.230+00	1.830+01	1.235+02	3.833+02	0.2
$8i_{11/2}$	3.401+00	3.686+01	1.662–01	5.564–01	2.066+01	1.233+02	3.816+02	1.1
$9i_{11/2}$	2.688+00	3.615+01	2.226–01	1.993–01	2.120+01	9.280+01	3.509+02	0.3
$10i_{11/2}$	2.177+00	3.564+01	2.164–01	1.070–01	2.160+01	9.343+01	3.515+02	0.4
$11i_{11/2}$	1.799+00	3.526+01	2.188–01	6.472–02	2.177+01	9.378+01	3.517+02	0.7
$12i_{11/2}$	1.512+00	2.794+01	2.282–01	4.235–02	2.178+01	9.392+01	3.515+02	0.6
$7i_{13/2}$	4.443+00	3.790+01	7.225–02	1.987+00	1.833+01	4.412+02	1.347+03	0.2
$8i_{13/2}$	3.401+00	3.686+01	6.095–02	1.902–01	2.040+01	3.655+02	1.301+03	0.3
$9i_{13/2}$	2.688+00	3.615+01	5.482–02	4.750–02	2.129+01	3.656+02	1.302+03	0.6
$10i_{13/2}$	2.177+00	3.564+01	5.384–02	1.939–02	2.168+01	3.663+02	1.302+03	0.8
$11i_{13/2}$	1.799+00	3.526+01	5.516–02	1.065–02	2.182+01	3.663+02	1.302+03	1.0
$12i_{13/2}$	1.512+00	2.794+01	5.794–02	7.034–03	2.181+01	3.663+02	1.301+03	0.8
Ti <sup>11+</sup>								
$3s_{1/2}$	2.910+02	5.062+04	2.097+00	1.160+02	4.552+00	1.995+03	1.793–01	1.1
$4s_{1/2}$	1.508+02	3.154+04	1.639–01	8.696+03	3.911+00	4.999+04	4.756+00	2.0
$5s_{1/2}$	9.224+01	1.967+04	2.753–01	5.144+03	3.589+00	4.999+04	4.867+00	2.2

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
6s <sub>1/2</sub>	6.224+01	1.553+04	1.711–01	1.180+04	3.408+00	1.200+05	3.575+00	2.4
7s <sub>1/2</sub>	4.482+01	1.226+04	1.893–01	9.104+03	3.279+00	1.600+05	5.274+00	2.5
8s <sub>1/2</sub>	3.381+01	9.680+03	2.888–01	3.661+03	3.178+00	1.600+05	5.613+00	2.4
9s <sub>1/2</sub>	2.642+01	7.645+03	4.587–01	1.293+03	3.097+00	1.600+05	6.191+00	2.2
10s <sub>1/2</sub>	2.120+01	6.038+03	7.705–01	3.998+02	3.027+00	1.600+05	4.860+00	2.0
11s <sub>1/2</sub>	1.740+01	4.769+03	9.807–01	2.027+02	2.989+00	1.600+05	4.461+00	1.8
12s <sub>1/2</sub>	1.453+01	4.766+03	9.195–01	1.847+02	2.975+00	1.600+05	4.516+00	2.4
3p <sub>1/2</sub>	2.652+02	1.573+04	4.330+01	1.781+01	6.199+00	5.044+01	8.035–01	0.3
4p <sub>1/2</sub>	1.407+02	1.235+04	9.459+00	3.393+01	6.440+00	2.296+02	5.527–02	0.6
5p <sub>1/2</sub>	8.734+01	9.733+03	1.302+01	1.538+01	6.000+00	2.320+02	1.997+00	1.1
6p <sub>1/2</sub>	5.950+01	7.678+03	2.051+00	1.089+02	6.074+00	1.489+03	6.217+00	1.0
7p <sub>1/2</sub>	4.313+01	6.060+03	2.591+00	6.708+01	5.841+00	1.490+03	4.814+00	1.3
8p <sub>1/2</sub>	3.270+01	4.785+03	3.383+00	3.893+01	5.618+00	1.488+03	3.449+00	1.6
9p <sub>1/2</sub>	2.564+01	4.778+03	6.349–01	4.189+02	5.640+00	8.010+03	1.193+01	2.0
10p <sub>1/2</sub>	2.065+01	3.774+03	8.065–01	2.644+02	5.496+00	8.009+03	8.175+00	2.0
11p <sub>1/2</sub>	1.698+01	2.981+03	3.890–01	8.351+02	5.412+00	2.002+04	1.305+01	2.2
12p <sub>1/2</sub>	1.421+01	2.978+03	8.765–02	1.071+04	5.359+00	1.001+05	4.556+01	2.8
3p <sub>3/2</sub>	2.641+02	1.573+04	3.782+01	2.076+01	6.354+00	5.087+01	7.988–01	0.4
4p <sub>3/2</sub>	1.403+02	1.235+04	1.887+01	1.736+01	6.241+00	1.225+02	1.619+00	0.8
5p <sub>3/2</sub>	8.714+01	9.733+03	2.210+00	1.230+02	6.319+00	1.078+03	4.760+00	0.9
6p <sub>3/2</sub>	5.938+01	7.678+03	2.790+00	7.512+01	6.043+00	1.079+03	5.079+00	1.1
7p <sub>3/2</sub>	4.306+01	6.060+03	3.604+00	4.420+01	5.788+00	1.078+03	3.795+00	1.4
8p <sub>3/2</sub>	3.265+01	4.785+03	4.760+00	2.483+01	5.548+00	1.079+03	2.709+00	1.7
9p <sub>3/2</sub>	2.561+01	3.779+03	6.591–01	4.301+02	5.600+00	8.002+03	1.111+01	1.6
10p <sub>3/2</sub>	2.062+01	3.774+03	7.768–01	2.930+02	5.488+00	8.003+03	8.353+00	2.2
11p <sub>3/2</sub>	1.696+01	2.981+03	3.844–01	9.000+02	5.397+00	1.997+04	1.292+01	2.2
12p <sub>3/2</sub>	1.420+01	2.978+03	8.492–02	1.194+04	5.349+00	1.000+05	4.667+01	2.6
3d <sub>3/2</sub>	2.287+02	6.245+03	1.464+01	6.602+02	6.362+00	1.420+02	4.104+00	0.8
4d <sub>3/2</sub>	1.274+02	4.879+03	1.452+01	1.718+02	6.836+00	1.304+02	2.406–01	0.6
5d <sub>3/2</sub>	8.097+01	3.834+03	1.369+01	7.367+01	7.118+00	1.277+02	1.192+00	0.3
6d <sub>3/2</sub>	5.594+01	3.020+03	9.555+00	6.430+01	7.357+00	1.684+02	1.514+00	0.2
7d <sub>3/2</sub>	4.094+01	2.382+03	4.080+00	1.225+02	7.674+00	3.415+02	2.376+00	0.2
8d <sub>3/2</sub>	3.126+01	2.372+03	4.656+00	7.309+01	7.517+00	3.411+02	2.144+00	0.3
9d <sub>3/2</sub>	2.464+01	1.873+03	1.034–01	1.407+04	7.849+00	1.285+04	4.717+01	0.3
10d <sub>3/2</sub>	1.992+01	1.869+03	1.039–01	1.083+04	7.828+00	1.285+04	4.713+01	0.6
11d <sub>3/2</sub>	1.644+01	1.477+03	1.226–01	8.902+03	7.668+00	1.286+04	3.283+01	1.0
12d <sub>3/2</sub>	1.380+01	1.474+03	2.381+00	8.201+01	7.172+00	1.099+03	2.208+00	3.0
3d <sub>5/2</sub>	2.285+02	6.245+03	2.487+01	2.241+02	6.209+00	8.791+01	2.778+00	0.9
4d <sub>5/2</sub>	1.274+02	4.879+03	2.415+01	7.203+01	6.562+00	8.915+01	1.111+00	0.7
5d <sub>5/2</sub>	8.094+01	3.834+03	1.441+01	6.843+01	7.097+00	1.209+02	1.206+00	0.3
6d <sub>5/2</sub>	5.592+01	3.020+03	9.298+00	6.677+01	7.381+00	1.687+02	1.533+00	0.1
7d <sub>5/2</sub>	4.093+01	2.382+03	1.019+01	3.720+01	7.268+00	1.687+02	1.462+00	0.5
8d <sub>5/2</sub>	3.125+01	2.372+03	1.154+00	4.750+02	7.846+00	1.114+03	5.738+00	0.3
9d <sub>5/2</sub>	2.464+01	1.873+03	1.278+00	3.256+02	7.729+00	1.114+03	5.008+00	0.4
10d <sub>5/2</sub>	1.992+01	1.869+03	1.490+00	2.236+02	7.561+00	1.114+03	3.801+00	1.0
11d <sub>5/2</sub>	1.644+01	1.477+03	1.729+00	1.507+02	7.420+00	1.113+03	3.133+00	1.3
12d <sub>5/2</sub>	1.380+01	1.474+03	2.061+00	9.987+01	7.258+00	1.110+03	2.482+00	1.9
4f <sub>5/2</sub>	1.227+02	1.972+03	2.476+01	2.149+02	5.228+00	2.602+02	1.724–01	0.5
5f <sub>5/2</sub>	7.856+01	1.539+03	3.293+01	3.547+01	6.118+00	8.961+01	6.970–01	0.4
6f <sub>5/2</sub>	5.455+01	1.515+03	2.203+01	5.059+01	7.426+00	5.914+01	7.794–01	0.7
7f <sub>5/2</sub>	4.007+01	1.193+03	1.218+01	8.976+01	8.824+00	5.401+01	1.051+00	0.8
8f <sub>5/2</sub>	3.068+01	9.415+02	5.313+00	1.598+02	9.857+00	8.409+01	1.737+00	0.6
9f <sub>5/2</sub>	2.423+01	9.350+02	2.481+00	2.396+02	1.022+01	1.643+02	2.850+00	0.6
10f <sub>5/2</sub>	1.963+01	9.304+02	2.974+00	1.565+02	9.904+00	1.636+02	2.187+00	0.7
11f <sub>5/2</sub>	1.622+01	7.355+02	3.383+00	1.065+02	9.685+00	1.631+02	1.840+00	1.1
12f <sub>5/2</sub>	1.363+01	7.329+02	1.661+00	1.906+02	9.914+00	3.126+02	2.998+00	1.3
4f <sub>7/2</sub>	1.227+02	1.972+03	4.200+01	3.655+01	4.665+00	3.365+02	7.703–01	0.2
5f <sub>7/2</sub>	7.855+01	1.539+03	3.238+01	3.714+01	6.133+00	9.026+01	6.919–01	0.4
6f <sub>7/2</sub>	5.455+01	1.515+03	2.181+01	5.200+01	7.470+00	5.764+01	7.873–01	0.7
7f <sub>7/2</sub>	4.007+01	1.193+03	9.694+00	1.256+02	9.124+00	5.984+01	1.165+00	0.8
8f <sub>7/2</sub>	3.067+01	9.415+02	5.809+00	1.454+02	9.777+00	7.922+01	1.628+00	0.6
9f <sub>7/2</sub>	2.423+01	9.350+02	1.529+00	3.862+02	1.039+01	2.493+02	4.207+00	0.6
10f <sub>7/2</sub>	1.963+01	9.304+02	1.730+00	2.696+02	1.019+01	2.485+02	3.462+00	0.6
11f <sub>7/2</sub>	1.622+01	7.355+02	1.973+00	1.918+02	9.972+00	2.480+02	2.799+00	1.0
12f <sub>7/2</sub>	1.363+01	7.329+02	2.226+00	1.373+02	9.782+00	2.476+02	2.376+00	1.3
5g <sub>7/2</sub>	7.839+01	9.892+02	3.555+01	3.275+01	6.200+00	4.977+01	6.875–01	0.3
6g <sub>7/2</sub>	5.444+01	7.738+02	1.461+01	4.630+02	1.038+01	1.865+01	9.529–01	0.3
7g <sub>7/2</sub>	3.999+01	7.593+02	9.007+00	5.988+02	1.209+01	2.076+01	1.257+00	0.3
8g <sub>7/2</sub>	3.062+01	5.987+02	5.029+00	5.525+02	1.324+01	3.006+01	1.955+00	0.2
9g <sub>7/2</sub>	2.419+01	5.923+02	5.129+00	3.343+02	1.296+01	3.383+01	1.730+00	0.4
10g <sub>7/2</sub>	1.960+01	4.683+02	3.740+00	2.705+02	1.295+01	4.984+01	1.983+00	0.8
11g <sub>7/2</sub>	1.620+01	4.649+02	3.938+00	1.939+02	1.263+01	5.391+01	1.703+00	1.1
12g <sub>7/2</sub>	1.361+01	4.623+02	2.431+00	2.012+02	1.277+01	8.922+01	2.334+00	1.6
5g <sub>9/2</sub>	7.838+01	9.891+02	3.512+01	3.422+01	6.217+00	4.995+01	6.878–01	0.3
6g <sub>9/2</sub>	5.443+01	7.737+02	1.584+01	3.835+02	1.018+01	1.831+01	9.198–01	0.3

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
7g <sub>9/2</sub>	3.999+01	7.593+02	8.519+00	6.426+02	1.220+01	2.130+01	1.306+00	0.3
8g <sub>9/2</sub>	3.062+01	5.987+02	8.011+00	3.771+02	1.234+01	2.383+01	1.307+00	0.4
9g <sub>9/2</sub>	2.419+01	5.923+02	1.733+00	4.815+02	1.388+01	8.037+01	4.522+00	0.3
10g <sub>9/2</sub>	1.960+01	4.683+02	2.055+00	3.491+02	1.346+01	7.975+01	3.382+00	0.7
11g <sub>9/2</sub>	1.620+01	4.649+02	2.463+00	2.545+02	1.298+01	7.970+01	2.511+00	1.2
12g <sub>9/2</sub>	1.361+01	4.623+02	2.760+00	1.873+02	1.266+01	8.118+01	2.070+00	1.6
6h <sub>9/2</sub>	5.443+01	5.031+02	9.897+00	3.105+03	1.281+01	1.266+01	1.718+00	0.4
7h <sub>9/2</sub>	3.999+01	4.887+02	9.995+00	1.939+03	1.367+01	1.237+01	1.176+00	0.1
8h <sub>9/2</sub>	3.062+01	3.850+02	7.556+00	1.858+03	1.504+01	1.361+01	1.361+00	0.2
9h <sub>9/2</sub>	2.419+01	3.785+02	4.053+00	1.454+03	1.619+01	2.225+01	2.078+00	0.2
10h <sub>9/2</sub>	1.959+01	3.739+02	3.855+00	8.781+02	1.593+01	2.642+01	1.919+00	0.6
11h <sub>9/2</sub>	1.619+01	2.961+02	3.240+00	5.931+02	1.566+01	3.573+01	1.940+00	0.8
12h <sub>9/2</sub>	1.361+01	2.935+02	3.693+00	4.152+02	1.525+01	3.538+01	1.573+00	1.2
6h <sub>11/2</sub>	5.443+01	5.031+02	1.039+01	2.863+03	1.279+01	1.205+01	1.680+00	0.4
7h <sub>11/2</sub>	3.999+01	4.887+02	1.055+01	1.827+03	1.364+01	1.169+01	1.164+00	0.1
8h <sub>11/2</sub>	3.062+01	3.850+02	8.446+00	1.714+03	1.489+01	1.242+01	1.277+00	0.3
9h <sub>11/2</sub>	2.419+01	3.785+02	2.486+00	1.405+03	1.670+01	3.325+01	3.198+00	0.2
10h <sub>11/2</sub>	1.959+01	3.739+02	2.799+00	8.953+02	1.632+01	3.383+01	2.555+00	0.5
11h <sub>11/2</sub>	1.619+01	2.961+02	2.784+00	6.102+02	1.585+01	4.000+01	2.225+00	0.8
12h <sub>11/2</sub>	1.361+01	2.935+02	3.379+00	4.186+02	1.527+01	3.922+01	1.686+00	1.2
7i <sub>11/2</sub>	3.999+01	3.199+02	1.181+01	1.309+03	1.308+01	1.205+01	1.037+00	0.1
8i <sub>11/2</sub>	3.062+01	3.105+02	1.407+01	5.782+02	1.311+01	1.205+01	7.335–01	0.5
9i <sub>11/2</sub>	2.419+01	3.041+02	7.035+00	3.824+03	1.693+01	1.158+01	1.185+00	0.2
10i <sub>11/2</sub>	1.959+01	2.406+02	4.453+00	3.011+03	1.777+01	1.761+01	1.463+00	0.5
11i <sub>11/2</sub>	1.619+01	2.372+02	3.049+00	2.094+03	1.858+01	2.362+01	1.990+00	0.5
12i <sub>11/2</sub>	1.361+01	2.346+02	2.322+00	1.325+03	1.866+01	3.236+01	2.336+00	0.8
7i <sub>13/2</sub>	3.999+01	3.199+02	1.179+01	1.316+03	1.307+01	1.207+01	1.035+00	0.1
8i <sub>13/2</sub>	3.061+01	3.105+02	1.394+01	6.216+02	1.320+01	1.179+01	7.375–01	0.4
9i <sub>13/2</sub>	2.419+01	3.041+02	4.183+00	5.839+03	1.813+01	1.603+01	1.790+00	0.1
10i <sub>13/2</sub>	1.959+01	2.406+02	4.390+00	3.424+03	1.822+01	1.617+01	1.609+00	0.2
11i <sub>13/2</sub>	1.619+01	2.372+02	3.623+00	2.069+03	1.825+01	2.103+01	1.693+00	0.5
12i <sub>13/2</sub>	1.361+01	2.346+02	2.975+00	1.363+03	1.828+01	2.696+01	1.843+00	0.8
Ti <sup>19+</sup>								
2s <sub>1/2</sub>	1.426+03	5.175+04	1.118+00	3.119+02	5.322+00	2.011+03	2.490+00	0.3
3s <sub>1/2</sub>	6.237+02	5.095+04	2.692+00	5.522+02	4.076+00	2.010+03	9.373–01	0.2
4s <sub>1/2</sub>	3.482+02	5.068+04	3.827+00	2.890+02	3.710+00	2.026+03	1.595+01	0.5
5s <sub>1/2</sub>	2.218+02	3.161+04	5.612+00	1.315+02	3.424+00	2.024+03	8.539+00	0.8
6s <sub>1/2</sub>	1.536+02	2.495+04	7.958+00	5.671+01	3.220+00	2.019+03	5.114+00	1.1
7s <sub>1/2</sub>	1.126+02	1.969+04	1.118+01	2.401+01	3.055+00	2.019+03	3.368+00	1.3
8s <sub>1/2</sub>	8.604+01	1.555+04	5.457–02	5.527+05	3.050+00	4.930+05	1.924+02	1.5
9s <sub>1/2</sub>	6.790+01	1.228+04	6.082–02	3.621+05	3.014+00	4.930+05	1.922+02	1.2
10s <sub>1/2</sub>	5.494+01	9.701+03	6.161–02	2.764+05	2.999+00	4.930+05	1.922+02	1.0
11s <sub>1/2</sub>	4.537+01	9.691+03	9.658–02	1.161+05	2.904+00	4.929+05	7.657+01	1.5
12s <sub>1/2</sub>	3.810+01	7.656+03	1.312–01	5.561+04	2.856+00	4.929+05	4.595+01	1.4
2p <sub>1/2</sub>	1.385+03	4.113+04	3.322+02	7.898+00	2.734+00	1.026+02	1.092+00	0.2
3p <sub>1/2</sub>	6.126+02	2.541+04	2.450+01	9.998+01	6.010+00	1.014+02	2.840–03	0.8
4p <sub>1/2</sub>	3.436+02	1.992+04	2.859+01	3.091+01	5.884+00	1.025+02	2.276+00	0.3
5p <sub>1/2</sub>	2.195+02	1.568+04	3.122+01	1.503+01	5.626+00	1.173+02	2.181+00	0.4
6p <sub>1/2</sub>	1.522+02	1.237+04	1.513+00	6.112+02	5.962+00	2.064+03	2.402+01	0.3
7p <sub>1/2</sub>	1.117+02	9.758+03	1.788+00	4.207+02	5.768+00	2.071+03	1.677+01	0.6
8p <sub>1/2</sub>	8.548+01	7.704+03	2.140+00	2.839+02	5.589+00	2.075+03	1.148+01	0.9
9p <sub>1/2</sub>	6.751+01	7.686+03	2.483+00	1.919+02	5.455+00	2.069+03	8.448+00	1.2
10p <sub>1/2</sub>	5.466+01	6.071+03	2.985+00	1.244+02	5.313+00	2.067+03	6.033+00	1.5
11p <sub>1/2</sub>	4.515+01	4.797+03	3.832+00	7.278+01	5.153+00	2.066+03	4.125+00	1.5
12p <sub>1/2</sub>	3.793+01	4.790+03	4.377+00	4.919+01	5.061+00	2.065+03	3.339+00	1.8
2p <sub>3/2</sub>	1.377+03	4.112+04	2.133+02	2.302+01	3.504+00	4.705+01	1.556+00	0.5
3p <sub>3/2</sub>	6.102+02	2.540+04	1.214+02	1.240+01	4.917+00	3.547+01	1.163+00	0.2
4p <sub>3/2</sub>	3.426+02	1.992+04	4.234+01	1.901+01	5.810+00	6.724+01	2.054+00	0.1
5p <sub>3/2</sub>	2.190+02	1.568+04	4.946+00	1.460+02	6.153+00	5.145+02	9.740+00	0.2
6p <sub>3/2</sub>	1.519+02	1.237+04	5.990+00	8.539+01	5.909+00	5.139+02	7.114+00	0.5
7p <sub>3/2</sub>	1.115+02	9.758+03	7.404+00	5.089+01	5.661+00	5.159+02	4.885+00	0.8
8p <sub>3/2</sub>	8.536+01	7.704+03	9.504+00	2.887+01	5.412+00	5.157+02	3.314+00	1.1
9p <sub>3/2</sub>	6.742+01	7.686+03	1.125+01	1.788+01	5.243+00	5.157+02	2.547+00	1.5
10p <sub>3/2</sub>	5.459+01	6.071+03	2.887+00	1.344+02	5.312+00	2.067+03	6.190+00	1.5
11p <sub>3/2</sub>	4.511+01	4.797+03	3.549+00	8.346+01	5.172+00	2.069+03	4.444+00	1.7
12p <sub>3/2</sub>	3.789+01	4.790+03	4.252+00	5.297+01	5.057+00	2.066+03	3.390+00	1.8
3d <sub>3/2</sub>	6.059+02	1.282+04	6.192+00	2.888+04	6.504+00	2.774+02	7.821–02	0.7
4d <sub>3/2</sub>	3.408+02	9.987+03	3.005+00	1.214+03	8.846+00	2.739+02	4.240+00	0.7
5d <sub>3/2</sub>	2.181+02	7.836+03	3.305+00	3.797+02	8.918+00	2.743+02	5.249+00	0.2
6d <sub>3/2</sub>	1.514+02	6.168+03	3.251+00	1.626+02	9.057+00	2.803+02	1.220+01	0.1
7d <sub>3/2</sub>	1.112+02	4.863+03	3.755+00	1.094+02	8.797+00	2.813+02	9.410+00	0.4
8d <sub>3/2</sub>	8.514+01	4.837+03	4.310+00	7.996+01	8.523+00	2.856+02	7.035+00	0.7
9d <sub>3/2</sub>	6.727+01	3.820+03	5.208+00	5.767+01	8.208+00	2.858+02	4.931+00	1.0

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av.}}$ , %
10d <sub>3/2</sub>	5.448+01	3.807+03	6.082+00	4.153+01	7.955+00	2.876+02	3.678+00	1.5
11d <sub>3/2</sub>	4.502+01	3.009+03	9.177–01	4.479+02	8.010+00	1.959+03	1.740+01	1.4
12d <sub>3/2</sub>	3.783+01	3.002+03	1.352+00	2.435+02	7.858+00	1.484+03	1.042+01	1.9
3d <sub>5/2</sub>	6.052+02	1.282+04	5.586+00	3.216+04	6.621+00	2.821+02	5.068+00	0.6
4d <sub>5/2</sub>	3.405+02	9.986+03	2.818+00	1.217+03	8.914+00	2.805+02	4.697+00	0.6
5d <sub>5/2</sub>	2.179+02	7.836+03	3.143+00	3.878+02	8.956+00	2.808+02	5.490+00	0.2
6d <sub>5/2</sub>	1.513+02	6.168+03	2.834+00	1.718+02	9.129+00	3.093+02	1.433+01	0.2
7d <sub>5/2</sub>	1.112+02	4.863+03	3.316+00	1.189+02	8.849+00	3.085+02	1.075+01	0.4
8d <sub>5/2</sub>	8.511+01	4.837+03	3.896+00	8.677+01	8.567+00	3.066+02	7.820+00	0.8
9d <sub>5/2</sub>	6.724+01	3.820+03	4.701+00	6.393+01	8.249+00	3.072+02	5.440+00	1.0
10d <sub>5/2</sub>	5.446+01	3.807+03	5.482+00	4.654+01	8.000+00	3.086+02	4.051+00	1.5
11d <sub>5/2</sub>	4.501+01	3.009+03	6.791+00	3.177+01	7.700+00	3.092+02	2.875+00	1.7
12d <sub>5/2</sub>	3.782+01	3.002+03	1.370+00	2.444+02	7.839+00	1.484+03	1.016+01	1.6
4f <sub>5/2</sub>	3.404+02	5.092+03	9.925+00	4.919+03	9.359+00	6.591+01	6.710+00	0.4
5f <sub>5/2</sub>	2.179+02	3.971+03	6.793+00	9.197+02	1.100+01	7.366+01	1.597+00	0.1
6f <sub>5/2</sub>	1.513+02	3.115+03	5.713+00	2.583+02	1.177+01	7.969+01	5.833+00	0.1
7f <sub>5/2</sub>	1.111+02	3.075+03	6.001+00	1.245+02	1.183+01	8.000+01	5.868+00	0.2
8f <sub>5/2</sub>	8.509+01	2.426+03	7.134+00	8.309+01	1.141+01	8.030+01	4.297+00	0.4
9f <sub>5/2</sub>	6.723+01	2.408+03	8.369+00	5.749+01	1.103+01	8.065+01	3.246+00	0.8
10f <sub>5/2</sub>	5.445+01	2.395+03	4.527+00	6.768+01	1.102+01	1.565+02	4.972+00	1.0
11f <sub>5/2</sub>	4.500+01	1.894+03	5.563+00	5.220+01	1.060+01	1.550+02	3.477+00	1.3
12f <sub>5/2</sub>	3.781+01	1.887+03	3.209+00	7.329+01	1.056+01	2.822+02	5.026+00	1.6
4f <sub>7/2</sub>	3.403+02	5.092+03	9.912+00	4.980+03	9.358+00	6.562+01	6.605+00	0.4
5f <sub>7/2</sub>	2.178+02	3.971+03	4.998+00	6.881+02	1.179+01	7.970+01	9.011+00	0.4
6f <sub>7/2</sub>	1.512+02	3.115+03	4.881+00	2.024+02	1.228+01	8.055+01	8.757+00	0.3
7f <sub>7/2</sub>	1.111+02	3.075+03	6.279+00	1.257+02	1.178+01	7.730+01	5.513+00	0.2
8f <sub>7/2</sub>	8.507+01	2.426+03	7.279+00	8.193+01	1.143+01	7.811+01	4.249+00	0.4
9f <sub>7/2</sub>	6.722+01	2.408+03	8.564+00	5.672+01	1.102+01	7.857+01	3.189+00	0.8
10f <sub>7/2</sub>	5.444+01	1.903+03	2.142+00	1.179+02	1.113+01	3.220+02	9.851+00	0.8
11f <sub>7/2</sub>	4.500+01	1.894+03	2.436+00	9.907+01	1.087+01	3.203+02	7.582+00	1.2
12f <sub>7/2</sub>	3.781+01	1.887+03	2.766+00	8.282+01	1.062+01	3.196+02	5.826+00	1.5
5g <sub>7/2</sub>	2.178+02	2.559+03	9.028+00	7.785+03	1.085+01	5.815+01	1.371+00	0.0
6g <sub>7/2</sub>	1.512+02	2.000+03	5.523+00	1.696+03	1.332+01	6.046+01	2.793+00	0.0
7g <sub>7/2</sub>	1.111+02	1.960+03	5.891+00	6.103+02	1.358+01	6.062+01	2.229+00	0.5
8g <sub>7/2</sub>	8.507+01	1.545+03	4.782+00	2.340+02	1.441+01	6.565+01	5.482+00	0.2
9g <sub>7/2</sub>	6.722+01	1.527+03	4.967+00	1.387+02	1.445+01	6.561+01	5.295+00	0.3
10g <sub>7/2</sub>	5.444+01	1.515+03	5.942+00	1.101+02	1.386+01	6.652+01	3.712+00	0.7
11g <sub>7/2</sub>	4.500+01	1.198+03	6.004+00	8.769+01	1.346+01	7.669+01	3.200+00	0.8
12g <sub>7/2</sub>	3.781+01	1.191+03	2.169+00	1.074+02	1.362+01	2.119+02	7.462+00	1.0
5g <sub>9/2</sub>	2.177+02	2.559+03	8.899+00	7.913+03	1.088+01	5.825+01	1.577+00	0.0
6g <sub>9/2</sub>	1.512+02	2.000+03	6.161+00	1.757+03	1.307+01	5.746+01	2.230–01	0.1
7g <sub>9/2</sub>	1.111+02	1.960+03	6.463+00	6.432+02	1.335+01	5.862+01	4.711–02	0.6
8g <sub>9/2</sub>	8.506+01	1.545+03	4.165+00	2.314+02	1.449+01	7.412+01	6.282+00	0.2
9g <sub>9/2</sub>	6.721+01	1.527+03	4.598+00	1.508+02	1.429+01	7.412+01	5.330+00	0.4
10g <sub>9/2</sub>	5.444+01	1.515+03	5.206+00	1.115+02	1.396+01	7.396+01	4.244+00	0.6
11g <sub>9/2</sub>	4.499+01	1.198+03	6.322+00	8.645+01	1.342+01	7.336+01	3.043+00	0.9
12g <sub>9/2</sub>	3.780+01	1.191+03	1.157+00	1.421+02	1.372+01	3.870+02	1.366+01	1.0
6h <sub>9/2</sub>	1.512+02	1.304+03	6.120+00	1.493+04	1.310+01	5.792+01	1.618+00	0.1
7h <sub>9/2</sub>	1.111+02	1.264+03	3.846+00	2.942+03	1.589+01	5.905+01	4.821+00	0.1
8h <sub>9/2</sub>	8.506+01	1.238+03	3.778+00	9.802+02	1.657+01	5.892+01	4.711+00	0.1
9h <sub>9/2</sub>	6.721+01	9.780+02	3.983+00	4.891+02	1.670+01	5.899+01	4.601+00	0.3
10h <sub>9/2</sub>	5.444+01	9.652+02	4.154+00	2.900+02	1.675+01	5.907+01	4.535+00	0.4
11h <sub>9/2</sub>	4.499+01	9.558+02	4.400+00	1.990+02	1.666+01	5.894+01	4.171+00	0.5
12h <sub>9/2</sub>	3.780+01	7.571+02	5.233+00	1.613+02	1.609+01	5.866+01	3.060+00	0.7
6l <sub>11/2</sub>	1.512+02	1.304+03	5.915+00	1.546+04	1.317+01	5.878+01	1.950+00	0.0
7h <sub>11/2</sub>	1.111+02	1.264+03	3.474+00	2.685+03	1.614+01	6.207+01	6.345+00	0.1
8h <sub>11/2</sub>	8.505+01	1.238+03	3.360+00	8.466+02	1.688+01	6.212+01	6.173+00	0.0
9h <sub>11/2</sub>	6.720+01	9.780+02	3.464+00	4.066+02	1.711+01	6.216+01	6.068+00	0.1
10h <sub>11/2</sub>	5.443+01	9.652+02	3.537+00	2.347+02	1.724+01	6.220+01	6.024+00	0.2
11h <sub>11/2</sub>	4.499+01	9.558+02	4.208+00	1.967+02	1.670+01	6.113+01	4.366+00	0.5
12h <sub>11/2</sub>	3.780+01	7.571+02	4.926+00	1.603+02	1.616+01	6.125+01	3.272+00	0.7
7i <sub>11/2</sub>	1.111+02	8.304+02	5.611+00	1.597+04	1.565+01	4.247+01	3.370+00	0.0
8i <sub>11/2</sub>	8.505+01	8.044+02	4.881+00	5.475+03	1.752+01	3.985+01	2.046+00	0.1
9i <sub>11/2</sub>	6.720+01	7.865+02	4.959+00	2.391+03	1.796+01	4.077+01	1.299+00	0.5
10i <sub>11/2</sub>	5.443+01	6.225+02	4.286+00	9.542+02	1.932+01	3.948+01	3.902+00	0.1
11i <sub>11/2</sub>	4.499+01	6.131+02	4.418+00	5.775+02	1.944+01	3.955+01	3.822+00	0.2
12i <sub>11/2</sub>	3.780+01	6.059+02	5.094+00	4.318+02	1.905+01	3.841+01	3.031+00	0.4
7i <sub>13/2</sub>	1.111+02	8.304+02	4.830+00	2.177+04	1.546+01	5.162+01	2.594+00	0.0
8i <sub>13/2</sub>	8.505+01	8.044+02	3.056+00	4.016+03	1.875+01	5.094+01	6.951+00	0.2
9i <sub>13/2</sub>	6.720+01	7.865+02	2.666+00	1.067+03	2.004+01	5.218+01	8.253+00	0.3
10i <sub>13/2</sub>	5.443+01	6.225+02	2.624+00	4.805+02	2.053+01	5.239+01	8.163+00	0.3
11i <sub>13/2</sub>	4.498+01	6.131+02	3.572+00	5.227+02	1.948+01	4.880+01	4.517+00	0.2
12i <sub>13/2</sub>	3.780+01	6.059+02	3.678+00	3.479+02	1.953+01	4.870+01	4.396+00	0.3
Ti <sup>20+</sup>								
1s <sub>1/2</sub>	6.255+03	5.658+04	1.554+00	7.570+04	4.144+00	2.011+03	2.819+00	0.1

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$2s_{1/2}$	1.541+03	5.187+04	1.160+00	4.087+02	5.238+00	2.012+03	4.272+00	0.2
$3s_{1/2}$	6.791+02	5.101+04	2.767+00	6.454+02	4.034+00	2.011+03	2.877+00	0.3
$4s_{1/2}$	3.803+02	5.071+04	3.753+00	3.362+02	3.707+00	2.040+03	1.926+01	0.5
$5s_{1/2}$	2.427+02	3.163+04	5.559+00	1.534+02	3.413+00	2.034+03	9.659+00	0.8
$6s_{1/2}$	1.683+02	2.496+04	7.825+00	6.725+01	3.209+00	2.043+03	5.635+00	1.1
$7s_{1/2}$	1.235+02	1.970+04	1.111+01	2.804+01	3.040+00	2.045+03	3.595+00	1.3
$8s_{1/2}$	9.443+01	1.556+04	6.485–02	4.807+05	3.031+00	4.160+05	1.920+02	1.4
$9s_{1/2}$	7.456+01	1.229+04	7.075–02	3.221+05	3.000+00	4.160+05	1.918+02	1.1
$10s_{1/2}$	6.035+01	1.227+04	8.846–02	1.884+05	2.938+00	4.159+05	1.159+02	1.4
$11s_{1/2}$	4.985+01	9.696+03	1.156–01	9.888+04	2.883+00	4.159+05	6.983+01	1.4
$12s_{1/2}$	4.187+01	7.660+03	1.601–01	4.556+04	2.833+00	4.158+05	3.984+01	1.3
$2p_{1/2}$	1.520+03	5.185+04	3.382+02	9.030+00	2.708+00	1.029+02	1.046+00	0.4
$3p_{1/2}$	6.732+02	3.206+04	2.366+01	1.062+02	6.123+00	1.020+02	3.017–02	0.9
$4p_{1/2}$	3.779+02	1.996+04	2.698+01	3.304+01	6.051+00	1.015+02	2.706+00	0.2
$5p_{1/2}$	2.415+02	1.571+04	3.335+01	1.391+01	5.750+00	1.034+02	2.353+00	0.3
$6p_{1/2}$	1.676+02	1.238+04	3.663+00	1.716+02	5.972+00	8.813+02	1.194+01	0.4
$7p_{1/2}$	1.230+02	9.769+03	4.440+00	1.096+02	5.748+00	8.840+02	8.200+00	0.7
$8p_{1/2}$	9.414+01	9.740+03	5.250+00	7.073+01	5.567+00	8.866+02	5.919+00	1.1
$9p_{1/2}$	7.435+01	7.693+03	6.561+00	4.283+01	5.369+00	8.863+02	4.089+00	1.3
$10p_{1/2}$	6.020+01	6.077+03	2.232+00	2.171+02	5.347+00	2.824+03	8.349+00	1.4
$11p_{1/2}$	4.974+01	6.066+03	2.639+00	1.437+02	5.230+00	2.828+03	6.154+00	1.5
$12p_{1/2}$	4.179+01	4.794+03	3.539+00	7.563+01	5.111+00	2.526+03	4.238+00	1.9
$2p_{3/2}$	1.511+03	4.126+04	4.767+02	3.717+00	2.376+00	1.019+02	9.796–01	0.3
$3p_{3/2}$	6.704+02	3.206+04	1.931+01	1.286+02	6.311+00	1.066+02	4.192–02	0.6
$4p_{3/2}$	3.767+02	1.996+04	2.280+01	3.875+01	6.224+00	1.034+02	3.376+00	0.1
$5p_{3/2}$	2.409+02	1.571+04	2.976+01	1.601+01	5.865+00	1.025+02	2.632+00	0.4
$6p_{3/2}$	1.672+02	1.238+04	7.622+00	6.185+01	5.941+00	4.106+02	6.476+00	0.6
$7p_{3/2}$	1.228+02	9.769+03	9.681+00	3.593+01	5.657+00	4.124+02	4.298+00	0.9
$8p_{3/2}$	9.399+01	9.740+03	1.204+01	2.089+01	5.428+00	4.097+02	3.052+00	1.3
$9p_{3/2}$	7.425+01	7.692+03	1.969+00	2.968+02	5.498+00	2.526+03	1.160+01	1.3
$10p_{3/2}$	6.013+01	6.077+03	2.409+00	1.939+02	5.342+00	2.527+03	7.891+00	1.4
$11p_{3/2}$	4.969+01	6.066+03	2.718+00	1.359+02	5.247+00	2.530+03	6.168+00	1.8
$12p_{3/2}$	4.174+01	4.794+03	3.583+00	7.691+01	5.087+00	2.525+03	4.124+00	1.6
$3d_{3/2}$	6.681+02	1.288+04	6.235+00	2.832+04	6.631+00	2.771+02	9.581–02	0.5
$4d_{3/2}$	3.758+02	1.002+04	3.158+00	1.087+03	8.914+00	2.766+02	3.688–01	0.5
$5d_{3/2}$	2.404+02	7.859+03	3.632+00	3.629+02	8.887+00	2.767+02	2.738–01	0.3
$6d_{3/2}$	1.669+02	6.184+03	3.567+00	1.394+02	9.117+00	2.730+02	1.268+01	0.2
$7d_{3/2}$	1.226+02	6.139+03	4.117+00	9.430+01	8.858+00	2.731+02	9.752+00	0.4
$8d_{3/2}$	9.387+01	4.846+03	5.026+00	6.797+01	8.523+00	2.689+02	6.698+00	0.7
$9d_{3/2}$	7.416+01	3.827+03	6.021+00	4.970+01	8.193+00	2.742+02	4.706+00	1.0
$10d_{3/2}$	6.007+01	3.813+03	7.114+00	3.507+01	7.935+00	2.739+02	3.495+00	1.4
$11d_{3/2}$	4.964+01	3.803+03	5.414–01	9.080+02	8.074+00	3.482+03	3.279+01	1.5
$12d_{3/2}$	4.171+01	3.006+03	6.218–01	7.773+02	7.907+00	3.457+03	2.400+01	1.8
$3d_{5/2}$	6.672+02	1.288+04	5.816+00	3.040+04	6.716+00	2.772+02	8.904–02	0.4
$4d_{5/2}$	3.754+02	1.002+04	3.028+00	1.062+03	8.985+00	2.767+02	3.171–01	0.4
$5d_{5/2}$	2.402+02	7.858+03	3.523+00	3.622+02	8.929+00	2.768+02	6.676–01	0.3
$6d_{5/2}$	1.668+02	6.184+03	3.433+00	1.379+02	9.169+00	2.747+02	1.339+01	0.2
$7d_{5/2}$	1.226+02	6.139+03	3.943+00	9.549+01	8.898+00	2.772+02	1.027+01	0.5
$8d_{5/2}$	9.383+01	4.846+03	4.682+00	7.169+01	8.562+00	2.804+02	7.225+00	0.8
$9d_{5/2}$	7.413+01	3.827+03	5.885+00	5.045+01	8.218+00	2.738+02	4.840+00	1.0
$10d_{5/2}$	6.004+01	3.813+03	6.988+00	3.577+01	7.949+00	2.738+02	3.549+00	1.4
$11d_{5/2}$	4.962+01	3.803+03	2.352+00	1.206+02	8.004+00	8.186+02	8.138+00	1.7
$12d_{5/2}$	4.170+01	3.006+03	2.860+00	9.023+01	7.764+00	8.190+02	5.686+00	1.6
$4f_{5/2}$	3.753+02	5.127+03	1.093+01	4.470+03	9.361+00	6.596+01	6.666+00	0.3
$5f_{5/2}$	2.402+02	3.993+03	7.139+00	5.205+02	1.185+01	6.058+01	7.736+00	0.4
$6f_{5/2}$	1.668+02	3.920+03	8.027+00	2.123+02	1.171+01	6.344+01	4.828+00	0.0
$7f_{5/2}$	1.225+02	3.087+03	8.709+00	1.072+02	1.165+01	6.404+01	4.423+00	0.2
$8f_{5/2}$	9.382+01	3.058+03	1.004+01	6.695+01	1.132+01	6.434+01	3.483+00	0.5
$9f_{5/2}$	7.413+01	2.415+03	1.217+01	4.432+01	1.082+01	6.537+01	2.528+00	0.8
$10f_{5/2}$	6.004+01	2.401+03	3.291+00	8.134+01	1.112+01	2.311+02	7.344+00	0.9
$11f_{5/2}$	4.962+01	2.391+03	3.686+00	6.772+01	1.084+01	2.346+02	5.716+00	1.3
$12f_{5/2}$	4.169+01	1.890+03	4.405+00	5.521+01	1.047+01	2.360+02	4.089+00	1.5
$4f_{7/2}$	3.751+02	5.127+03	1.077+01	4.575+03	9.385+00	6.591+01	6.691+00	0.3
$5f_{7/2}$	2.401+02	3.993+03	7.968+00	7.977+02	1.099+01	6.908+01	1.602+00	0.1
$6f_{7/2}$	1.668+02	3.920+03	7.701+00	2.556+02	1.145+01	7.121+01	3.449+00	0.2
$7f_{7/2}$	1.225+02	3.087+03	8.628+00	1.221+02	1.136+01	7.093+01	3.816+00	0.5
$8f_{7/2}$	9.380+01	3.058+03	8.836+00	7.033+01	1.142+01	7.078+01	3.947+00	0.5
$9f_{7/2}$	7.411+01	2.415+03	1.071+01	4.801+01	1.092+01	7.180+01	2.832+00	0.7
$10f_{7/2}$	6.003+01	2.401+03	3.336+00	8.059+01	1.112+01	2.271+02	7.253+00	0.9
$11f_{7/2}$	4.961+01	2.391+03	3.766+00	6.662+01	1.084+01	2.289+02	5.599+00	1.3
$12f_{7/2}$	4.169+01	1.890+03	4.513+00	5.398+01	1.047+01	2.298+02	4.012+00	1.5
$5g_{7/2}$	2.401+02	2.581+03	9.941+00	7.056+03	1.084+01	5.837+01	1.455+00	0.0
$6g_{7/2}$	1.668+02	2.508+03	5.660+00	1.314+03	1.369+01	5.950+01	5.299+00	0.2
$7g_{7/2}$	1.225+02	1.971+03	5.524+00	4.528+02	1.416+01	6.174+01	4.837+00	0.1

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$8g_{7/2}$	9.380+01	1.943+03	5.750+00	2.176+02	1.431+01	6.168+01	4.949+00	0.2
$9g_{7/2}$	7.411+01	1.534+03	5.912+00	1.270+02	1.439+01	6.167+01	4.897+00	0.3
$10g_{7/2}$	6.003+01	1.520+03	7.224+00	9.842+01	1.377+01	6.184+01	3.377+00	0.6
$11g_{7/2}$	4.961+01	1.510+03	8.012+00	7.371+01	1.339+01	6.396+01	2.723+00	0.9
$12g_{7/2}$	4.169+01	1.195+03	1.634+00	1.154+02	1.368+01	3.068+02	1.080+01	0.9
$5g_{9/2}$	2.401+02	2.581+03	9.867+00	7.143+03	1.086+01	5.838+01	1.437+00	0.0
$6g_{9/2}$	1.667+02	2.508+03	6.499+00	1.570+03	1.317+01	5.865+01	1.749+00	0.1
$7g_{9/2}$	1.225+02	1.971+03	5.448+00	4.367+02	1.425+01	6.106+01	5.148+00	0.1
$8g_{9/2}$	9.378+01	1.943+03	5.621+00	2.081+02	1.444+01	6.099+01	5.275+00	0.2
$9g_{9/2}$	7.410+01	1.534+03	6.542+00	1.371+02	1.412+01	5.975+01	4.147+00	0.4
$10g_{9/2}$	6.002+01	1.520+03	1.413+00	1.222+02	1.433+01	2.778+02	1.641+01	0.5
$11g_{9/2}$	4.960+01	1.510+03	1.567+00	1.136+02	1.403+01	2.793+02	1.303+01	0.8
$12g_{9/2}$	4.168+01	1.195+03	1.821+00	1.112+02	1.365+01	2.768+02	9.654+00	0.9
$6h_{9/2}$	1.667+02	1.627+03	7.094+00	1.295+04	1.299+01	5.681+01	1.409–02	0.1
$7h_{9/2}$	1.225+02	1.276+03	4.915+00	3.150+03	1.537+01	5.703+01	1.561+00	0.1
$8h_{9/2}$	9.378+01	1.247+03	5.009+00	1.138+03	1.588+01	5.689+01	1.753+00	0.4
$9h_{9/2}$	7.410+01	1.227+03	4.458+00	3.951+02	1.700+01	5.439+01	5.170+00	0.2
$10h_{9/2}$	6.002+01	9.708+02	4.539+00	2.278+02	1.715+01	5.438+01	5.196+00	0.2
$11h_{9/2}$	4.960+01	9.604+02	5.198+00	1.864+02	1.654+01	5.658+01	3.826+00	0.5
$12h_{9/2}$	4.168+01	9.525+02	5.347+00	1.426+02	1.626+01	6.061+01	3.395+00	0.7
$6h_{11/2}$	1.667+02	1.627+03	6.994+00	1.323+04	1.301+01	5.726+01	8.291–02	0.1
$7h_{11/2}$	1.225+02	1.276+03	4.379+00	2.917+03	1.568+01	5.978+01	3.701+00	0.0
$8h_{11/2}$	9.377+01	1.247+03	4.345+00	9.949+02	1.631+01	5.968+01	3.670+00	0.2
$9h_{11/2}$	7.409+01	1.227+03	3.907+00	3.737+02	1.709+01	6.102+01	5.911+00	0.1
$10h_{11/2}$	6.001+01	9.708+02	3.998+00	2.164+02	1.721+01	6.105+01	5.854+00	0.2
$11h_{11/2}$	4.960+01	9.604+02	4.864+00	1.824+02	1.662+01	5.944+01	4.123+00	0.5
$12h_{11/2}$	4.168+01	9.525+02	5.418+00	1.430+02	1.625+01	5.996+01	3.352+00	0.7
$7i_{11/2}$	1.225+02	1.033+03	5.196+00	2.242+04	1.525+01	5.562+01	7.840–01	0.1
$8i_{11/2}$	9.377+01	1.005+03	3.541+00	5.275+03	1.792+01	5.656+01	3.642+00	0.0
$9i_{11/2}$	7.409+01	7.934+02	3.186+00	1.516+03	1.913+01	5.652+01	5.303+00	0.1
$10i_{11/2}$	6.001+01	7.793+02	3.415+00	8.137+02	1.920+01	5.642+01	4.631+00	0.3
$11i_{11/2}$	4.960+01	7.689+02	3.597+00	4.969+02	1.922+01	5.644+01	4.443+00	0.5
$12i_{11/2}$	4.168+01	6.098+02	3.712+00	3.242+02	1.927+01	5.643+01	4.428+00	0.4
$7i_{13/2}$	1.225+02	1.033+03	5.053+00	2.209+04	1.539+01	5.534+01	2.145+00	0.1
$8i_{13/2}$	9.377+01	1.005+03	4.292+00	5.754+03	1.749+01	5.053+01	1.088+00	0.1
$9i_{13/2}$	7.409+01	7.934+02	4.270+00	2.293+03	1.805+01	5.159+01	3.411–04	0.4
$10i_{13/2}$	6.001+01	7.793+02	3.362+00	6.977+02	1.959+01	5.317+01	5.507+00	0.1
$11i_{13/2}$	4.960+01	7.689+02	3.434+00	4.052+02	1.976+01	5.317+01	5.490+00	0.2
$12i_{13/2}$	4.168+01	6.098+02	3.883+00	3.254+02	1.932+01	5.331+01	4.334+00	0.4
Ti <sup>21+</sup>								
$1s_{1/2}$	6.628+03	5.696+04	1.364+00	8.327+04	4.241+00	2.011+03	2.895+00	0.2
$2s_{1/2}$	1.660+03	5.199+04	1.195+00	5.148+02	5.171+00	2.008+03	4.391+00	0.2
$3s_{1/2}$	7.365+02	5.106+04	2.831+00	7.421+02	4.000+00	2.008+03	3.708+00	0.4
$4s_{1/2}$	4.138+02	5.074+04	3.717+00	3.793+02	3.708+00	2.030+03	2.254+01	0.5
$5s_{1/2}$	2.646+02	4.001+04	5.334+00	1.810+02	3.427+00	2.015+03	1.149+01	0.9
$6s_{1/2}$	1.836+02	2.498+04	7.916+00	7.502+01	3.198+00	2.012+03	6.065+00	1.0
$7s_{1/2}$	1.348+02	1.972+04	1.129+01	3.099+01	3.028+00	2.010+03	3.797+00	1.2
$8s_{1/2}$	1.032+02	1.557+04	1.344+01	1.708+01	2.936+00	2.010+03	2.966+00	1.4
$9s_{1/2}$	8.152+01	1.555+04	7.192–02	3.873+05	2.976+00	4.162+05	1.919+02	1.5
$10s_{1/2}$	6.601+01	1.228+04	7.329–02	2.899+05	2.962+00	4.162+05	1.919+02	1.1
$11s_{1/2}$	5.455+01	9.701+03	1.154–01	1.191+05	2.867+00	4.162+05	7.758+01	1.3
$12s_{1/2}$	4.583+01	9.692+03	1.366–01	7.264+04	2.833+00	4.162+05	5.613+01	1.5
$2p_{1/2}$	1.660+03	5.199+04	4.505+02	5.011+00	2.483+00	1.030+02	1.015+00	0.3
$3p_{1/2}$	7.365+02	3.213+04	2.210+01	1.131+02	6.291+00	1.023+02	4.691–03	0.8
$4p_{1/2}$	4.138+02	2.521+04	2.604+01	3.452+01	6.175+00	1.016+02	3.078+00	0.3
$5p_{1/2}$	2.646+02	1.573+04	3.269+01	1.451+01	5.868+00	1.015+02	2.608+00	0.3
$6p_{1/2}$	1.836+02	1.240+04	1.543+01	2.504+01	5.832+00	2.359+02	3.870+00	0.6
$7p_{1/2}$	1.348+02	1.235+04	1.969+01	1.356+01	5.534+00	2.360+02	2.695+00	1.0
$8p_{1/2}$	1.032+02	9.749+03	1.000+00	9.850+02	5.687+00	4.448+03	2.964+01	1.0
$9p_{1/2}$	8.152+01	7.700+03	1.193+00	7.070+02	5.528+00	4.449+03	2.011+01	1.2
$10p_{1/2}$	6.601+01	7.684+03	1.352+00	5.147+02	5.417+00	4.450+03	1.486+01	1.6
$11p_{1/2}$	5.455+01	6.071+03	1.680+00	3.349+02	5.274+00	4.454+03	9.906+00	1.4
$12p_{1/2}$	4.583+01	6.063+03	1.814+00	2.517+02	5.210+00	4.456+03	8.150+00	1.9
$2p_{3/2}$	1.649+03	5.198+04	5.414+02	3.116+00	2.260+00	1.042+02	9.499–01	0.3
$3p_{3/2}$	7.333+02	3.212+04	1.799+01	1.280+02	6.549+00	1.039+02	2.827+00	0.6
$4p_{3/2}$	4.124+02	1.999+04	2.529+01	3.933+01	6.104+00	1.041+02	2.389+00	0.4
$5p_{3/2}$	2.639+02	1.573+04	2.982+01	1.616+01	5.977+00	9.878+01	2.890+00	0.4
$6p_{3/2}$	1.832+02	1.240+04	1.958+00	3.829+02	6.102+00	1.510+03	2.558+01	0.5
$7p_{3/2}$	1.346+02	1.235+04	2.348+00	2.702+02	5.879+00	1.505+03	1.719+01	0.9
$8p_{3/2}$	1.030+02	9.749+03	2.861+00	1.859+02	5.665+00	1.508+03	1.131+01	1.1
$9p_{3/2}$	8.140+01	7.700+03	3.511+00	1.223+02	5.475+00	1.513+03	7.554+00	1.3
$10p_{3/2}$	6.593+01	7.684+03	4.091+00	8.235+01	5.341+00	1.517+03	5.617+00	1.6
$11p_{3/2}$	5.448+01	6.071+03	5.079+00	5.081+01	5.185+00	1.517+03	3.985+00	1.8
$12p_{3/2}$	4.578+01	6.062+03	6.115+00	3.204+01	5.060+00	1.517+03	3.057+00	1.8
$3d_{3/2}$	7.333+02	1.295+04	6.282+00	2.752+04	6.753+00	2.770+02	4.772–02	0.4

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$4d_{3/2}$	4.124+02	1.006+04	3.318+00	9.441+02	9.004+00	2.761+02	2.316–01	0.3
$5d_{3/2}$	2.639+02	7.882+03	3.896+00	3.266+02	8.927+00	2.764+02	2.685–01	0.3
$6d_{3/2}$	1.832+02	7.801+03	3.791+00	1.230+02	9.179+00	2.732+02	1.341+01	0.2
$7d_{3/2}$	1.346+02	6.151+03	4.436+00	8.530+01	8.887+00	2.732+02	1.001+01	0.5
$8d_{3/2}$	1.030+02	4.855+03	5.369+00	6.319+01	8.536+00	2.737+02	6.872+00	0.7
$9d_{3/2}$	8.140+01	4.833+03	6.322+00	4.553+01	8.264+00	2.725+02	5.038+00	1.1
$10d_{3/2}$	6.593+01	3.819+03	7.902+00	3.157+01	7.923+00	2.727+02	3.444+00	1.3
$11d_{3/2}$	5.448+01	3.807+03	9.261+00	2.214+01	7.689+00	2.730+02	2.639+00	1.7
$12d_{3/2}$	4.578+01	3.010+03	6.528–02	2.482+04	7.925+00	3.597+04	2.409+02	1.7
$3d_{5/2}$	7.322+02	1.295+04	5.845+00	2.937+04	6.844+00	2.773+02	1.178+00	0.3
$4d_{5/2}$	4.120+02	1.006+04	3.176+00	9.218+02	9.076+00	2.765+02	1.009+00	0.2
$5d_{5/2}$	2.637+02	7.882+03	3.781+00	3.258+02	8.969+00	2.763+02	1.450+00	0.4
$6d_{5/2}$	1.831+02	7.801+03	3.602+00	1.193+02	9.257+00	2.753+02	1.462+01	0.2
$7d_{5/2}$	1.345+02	6.151+03	4.264+00	8.658+01	8.922+00	2.769+02	1.047+01	0.5
$8d_{5/2}$	1.030+02	4.855+03	5.146+00	6.480+01	8.570+00	2.778+02	7.217+00	0.8
$9d_{5/2}$	8.136+01	4.833+03	5.848+00	4.918+01	8.297+00	2.865+02	5.424+00	1.1
$10d_{5/2}$	6.590+01	3.819+03	7.271+00	3.456+01	7.966+00	2.862+02	3.721+00	1.3
$11d_{5/2}$	5.446+01	3.807+03	8.602+00	2.418+01	7.728+00	2.843+02	2.812+00	1.7
$12d_{5/2}$	4.576+01	3.010+03	2.519–01	3.220+03	7.913+00	9.344+03	6.273+01	1.4
$4f_{5/2}$	4.120+02	6.429+03	1.200+01	4.004+03	9.372+00	6.597+01	6.895+00	0.4
$5f_{5/2}$	2.637+02	5.016+03	7.092+00	5.738+02	1.161+01	7.186+01	7.296+00	0.4
$6f_{5/2}$	1.831+02	3.936+03	8.750+00	2.254+02	1.141+01	7.037+01	3.769+00	0.3
$7f_{5/2}$	1.345+02	3.887+03	9.557+00	1.096+02	1.137+01	7.047+01	3.842+00	0.6
$8f_{5/2}$	1.030+02	3.067+03	1.003+01	6.400+01	1.135+01	7.046+01	3.761+00	0.5
$9f_{5/2}$	8.136+01	3.045+03	1.180+01	4.319+01	1.095+01	7.075+01	2.852+00	0.8
$10f_{5/2}$	6.590+01	2.407+03	3.952–01	3.931+02	1.129+01	2.014+03	6.351+01	0.8
$11f_{5/2}$	5.446+01	2.395+03	4.430–01	4.070+02	1.106+01	2.004+03	4.882+01	1.1
$12f_{5/2}$	4.576+01	2.387+03	4.925–01	4.068+02	1.085+01	1.995+03	3.800+01	1.4
$4f_{7/2}$	4.117+02	6.428+03	1.470+01	4.207+03	8.637+00	6.997+01	5.621–02	0.1
$5f_{7/2}$	2.635+02	5.015+03	7.053+00	8.030+02	1.113+01	8.257+01	3.012+00	0.1
$6f_{7/2}$	1.830+02	3.936+03	7.977+00	2.773+02	1.118+01	8.278+01	2.118+00	0.5
$7f_{7/2}$	1.345+02	3.887+03	6.474+00	1.094+02	1.183+01	8.987+01	6.365+00	0.2
$8f_{7/2}$	1.029+02	3.067+03	7.500+00	7.150+01	1.152+01	8.940+01	4.981+00	0.4
$9f_{7/2}$	8.134+01	3.045+03	8.775+00	5.084+01	1.114+01	8.948+01	3.745+00	0.7
$10f_{7/2}$	6.588+01	2.407+03	1.091+01	3.596+01	1.063+01	8.964+01	2.610+00	1.0
$11f_{7/2}$	5.445+01	2.395+03	3.241+00	7.429+01	1.088+01	2.897+02	7.004+00	1.2
$12f_{7/2}$	4.575+01	2.387+03	3.664+00	6.179+01	1.062+01	2.897+02	5.421+00	1.5
$5g_{7/2}$	2.635+02	3.228+03	1.100+01	6.345+03	1.082+01	5.853+01	1.486+00	0.1
$6g_{7/2}$	1.830+02	2.524+03	6.917+00	1.368+03	1.329+01	5.895+01	2.914+00	0.0
$7g_{7/2}$	1.345+02	2.475+03	7.309+00	4.956+02	1.358+01	5.929+01	2.289+00	0.4
$8g_{7/2}$	1.029+02	1.952+03	6.353+00	1.932+02	1.436+01	6.055+01	5.054+00	0.2
$9g_{7/2}$	8.134+01	1.930+03	7.025+00	1.236+02	1.416+01	6.050+01	4.273+00	0.4
$10g_{7/2}$	6.588+01	1.526+03	7.705+00	9.144+01	1.372+01	6.466+01	3.405+00	0.6
$11g_{7/2}$	5.445+01	1.515+03	2.775+00	9.315+01	1.390+01	1.797+02	8.108+00	0.7
$12g_{7/2}$	4.575+01	1.506+03	3.081+00	8.108+01	1.361+01	1.803+02	6.489+00	1.0
$5g_{9/2}$	2.635+02	3.227+03	1.091+01	6.418+03	1.084+01	5.842+01	1.593+00	0.0
$6g_{9/2}$	1.830+02	2.524+03	7.178+00	1.473+03	1.309+01	5.959+01	8.370–01	0.1
$7g_{9/2}$	1.344+02	2.475+03	7.190+00	5.123+02	1.355+01	6.045+01	1.872+00	0.4
$8g_{9/2}$	1.029+02	1.952+03	6.797+00	1.944+02	1.433+01	5.686+01	4.715+00	0.2
$9g_{9/2}$	8.133+01	1.930+03	7.436+00	1.234+02	1.413+01	5.735+01	4.053+00	0.4
$10g_{9/2}$	6.587+01	1.526+03	8.959+00	8.821+01	1.363+01	5.670+01	2.972+00	0.6
$11g_{9/2}$	5.444+01	1.515+03	1.035+01	6.347+01	1.321+01	5.696+01	2.326+00	0.9
$12g_{9/2}$	4.575+01	1.506+03	6.040–01	1.561+02	1.387+01	8.593+02	3.253+01	0.9
$6h_{9/2}$	1.830+02	1.643+03	8.187+00	1.060+04	1.301+01	5.380+01	1.315+00	0.0
$7h_{9/2}$	1.344+02	1.595+03	4.668+00	2.124+03	1.613+01	5.616+01	6.038+00	0.2
$8h_{9/2}$	1.029+02	1.256+03	4.530+00	7.293+02	1.678+01	5.700+01	5.494+00	0.0
$9h_{9/2}$	8.133+01	1.235+03	4.673+00	3.557+02	1.700+01	5.706+01	5.393+00	0.1
$10h_{9/2}$	6.587+01	1.219+03	4.784+00	2.079+02	1.712+01	5.712+01	5.314+00	0.2
$11h_{9/2}$	5.444+01	1.208+03	5.315+00	1.636+02	1.667+01	5.897+01	4.192+00	0.5
$12h_{9/2}$	4.575+01	9.565+02	6.333+00	1.314+02	1.614+01	5.782+01	3.119+00	0.7
$6h_{11/2}$	1.830+02	1.643+03	7.066+00	1.287+04	1.318+01	5.961+01	2.315+00	0.0
$7h_{11/2}$	1.344+02	1.595+03	5.297+00	2.948+03	1.533+01	5.852+01	1.073+00	0.1
$8h_{11/2}$	1.029+02	1.256+03	5.451+00	1.079+03	1.580+01	5.854+01	1.024+00	0.4
$9h_{11/2}$	8.132+01	1.235+03	4.124+00	3.414+02	1.706+01	6.394+01	6.057+00	0.1
$10h_{11/2}$	6.587+01	1.219+03	4.402+00	2.161+02	1.698+01	6.411+01	5.457+00	0.3
$11h_{11/2}$	5.444+01	1.208+03	4.856+00	1.596+02	1.674+01	6.362+01	4.595+00	0.5
$12h_{11/2}$	4.574+01	9.565+02	5.351+00	1.305+02	1.628+01	6.649+01	3.668+00	0.6
$7i_{11/2}$	1.344+02	1.045+03	5.707+00	2.062+04	1.520+01	5.627+01	1.928–01	0.1
$8i_{11/2}$	1.029+02	1.014+03	4.840+00	4.948+03	1.758+01	4.835+01	2.036+00	0.1
$9i_{11/2}$	8.132+01	9.921+02	4.302+00	1.666+03	1.871+01	4.942+01	3.533+00	0.2
$10i_{11/2}$	6.587+01	7.852+02	4.015+00	6.750+02	1.950+01	4.964+01	5.048+00	0.1
$11i_{11/2}$	5.444+01	7.738+02	4.158+00	4.071+02	1.959+01	4.974+01	4.862+00	0.2
$12i_{11/2}$	4.574+01	7.650+02	4.267+00	2.719+02	1.965+01	4.973+01	4.688+00	0.3
$7i_{13/2}$	1.344+02	1.045+03	5.765+00	1.916+04	1.534+01	5.389+01	1.994+00	0.0
$8i_{13/2}$	1.029+02	1.014+03	3.747+00	5.667+03	1.762+01	6.218+01	1.058+00	0.1

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$9i_{13/2}$	8.131+01	9.921+02	3.710+00	2.052+03	1.827+01	6.262+01	6.652–01	0.4
$10i_{13/2}$	6.586+01	7.852+02	2.870+00	5.655+02	1.961+01	6.850+01	6.772+00	0.1
$11i_{13/2}$	5.443+01	7.737+02	2.949+00	3.242+02	1.976+01	6.846+01	6.729+00	0.2
$12i_{13/2}$	4.574+01	7.650+02	3.018+00	2.106+02	1.984+01	6.836+01	6.609+00	0.3
$\text{Cr}^{5+}$								
$4s_{1/2}$	6.145+01	1.964+04	4.127+00	1.185+01	4.316+00	1.601+03	7.287–04	1.2
$5s_{1/2}$	3.307+01	1.225+04	5.269–03	1.501+05	4.021+00	2.000+06	3.119+00	2.2
$6s_{1/2}$	2.075+01	9.667+03	7.316–03	1.515+05	3.767+00	2.500+06	4.788+00	3.2
$7s_{1/2}$	1.425+01	7.632+03	1.185–02	7.854+04	3.612+00	2.500+06	5.076+00	3.7
$8s_{1/2}$	1.039+01	6.027+03	1.929–02	3.346+04	3.503+00	2.500+06	5.714+00	3.9
$9s_{1/2}$	7.914+00	4.760+03	3.523–02	1.069+04	3.416+00	2.500+06	5.393–04	3.9
$10s_{1/2}$	6.228+00	3.759+03	3.501–01	1.766+02	3.260+00	2.000+06	2.626–04	4.4
$11s_{1/2}$	5.029+00	2.969+03	2.307–01	2.964+02	3.241+00	4.000+06	1.964–04	4.1
$12s_{1/2}$	4.146+00	2.345+03	1.651–01	4.321+02	3.235+00	4.000+06	2.672+00	5.1
$4p_{1/2}$	5.296+01	1.227+04	2.107+01	2.525+00	7.779+00	5.637+01	9.059–01	1.1
$5p_{1/2}$	2.956+01	7.648+03	3.613+00	1.751+00	8.119+00	2.959+02	4.672+00	0.7
$6p_{1/2}$	1.896+01	6.036+03	3.525–01	4.516+00	7.837+00	3.605+03	4.554+01	0.9
$7p_{1/2}$	1.321+01	4.765+03	4.824–01	5.618+00	7.374+00	3.597+03	2.855+01	2.2
$8p_{1/2}$	9.739+00	3.763+03	6.684–01	5.848+00	6.962+00	3.681+03	1.692+01	3.7
$9p_{1/2}$	7.477+00	2.971+03	9.599–01	4.965+00	6.607+00	3.690+03	9.583+00	4.8
$10p_{1/2}$	5.921+00	2.347+03	1.071+00	4.319+00	6.439+00	3.690+03	7.305+00	6.5
$11p_{1/2}$	4.805+00	2.346+03	4.155–01	4.579–02	9.426+00	1.016+03	6.640+01	8.7
$12p_{1/2}$	3.978+00	1.853+03	4.180–01	4.717–02	9.299+00	1.019+03	6.159+01	8.9
$4p_{3/2}$	5.273+01	9.699+03	1.899+01	2.707+00	7.889+00	5.709+01	9.516–01	0.9
$5p_{3/2}$	2.946+01	7.648+03	2.282+00	2.110+00	8.161+00	4.451+02	6.877+00	0.7
$6p_{3/2}$	1.891+01	6.036+03	1.627–01	8.505+00	7.784+00	7.790+03	9.270+01	1.0
$7p_{3/2}$	1.319+01	4.765+03	2.208–01	1.198+01	7.341+00	7.773+03	5.897+01	2.3
$8p_{3/2}$	9.721+00	3.763+03	3.129–01	1.370+01	6.940+00	7.783+03	3.407+01	3.8
$9p_{3/2}$	7.465+00	2.971+03	4.728–01	1.244+01	6.572+00	7.791+03	1.809+01	5.4
$10p_{3/2}$	5.912+00	2.347+03	7.077–01	9.182+00	6.278+00	7.787+03	9.866+00	6.3
$11p_{3/2}$	4.799+00	2.346+03	3.795–01	3.914–02	9.558+00	1.010+03	7.343+01	9.1
$12p_{3/2}$	3.973+00	1.853+03	3.862–01	4.139–02	9.416+00	1.011+03	6.721+01	9.0
$3d_{3/2}$	9.074+01	3.844+03	3.196+01	1.178+02	6.502+00	5.193+01	2.149–01	1.7
$4d_{3/2}$	3.990+01	3.004+03	1.307+01	4.201+01	8.407+00	5.926+01	2.751–01	0.8
$5d_{3/2}$	2.396+01	2.365+03	7.357+00	2.601+01	8.865+00	9.230+01	5.644–01	0.5
$6d_{3/2}$	1.603+01	1.865+03	4.339+00	1.913+01	9.074+00	1.485+02	8.773–01	0.4
$7d_{3/2}$	1.148+01	1.860+03	2.463+00	1.642+01	9.205+00	2.529+02	1.341+00	0.4
$8d_{3/2}$	8.631+00	1.469+03	1.226+00	1.703+01	9.295+00	4.955+02	2.331+00	0.4
$9d_{3/2}$	6.725+00	1.467+03	1.469+00	1.305+01	9.014+00	4.953+02	2.131+00	1.0
$10d_{3/2}$	5.387+00	1.159+03	3.060–01	2.925+01	9.218+00	2.151+03	8.186+00	0.7
$11d_{3/2}$	4.413+00	1.158+03	3.509–01	2.490+01	9.043+00	2.151+03	6.938+00	1.5
$12d_{3/2}$	3.681+00	1.157+03	3.828–01	2.118+01	8.917+00	2.154+03	6.132+00	2.1
$3d_{5/2}$	9.060+01	3.844+03	3.102+01	1.261+02	6.618+00	4.821+01	1.610–01	1.9
$4d_{5/2}$	3.987+01	3.004+03	1.276+01	4.310+01	8.443+00	5.916+01	2.289–01	0.8
$5d_{5/2}$	2.395+01	2.365+03	6.049+00	2.848+01	9.073+00	1.012+02	1.373–01	0.5
$6d_{5/2}$	1.602+01	1.865+03	2.729+00	2.259+01	9.397+00	2.007+02	8.217–03	0.5
$7d_{5/2}$	1.148+01	1.860+03	2.378+00	1.689+01	9.216+00	2.589+02	1.379+00	0.5
$8d_{5/2}$	8.628+00	1.469+03	1.166+00	1.780+01	9.299+00	5.171+02	2.442+00	0.5
$9d_{5/2}$	6.723+00	1.467+03	1.376+00	1.374+01	9.035+00	5.171+02	2.259+00	1.3
$10d_{5/2}$	5.386+00	1.159+03	3.942–02	1.508+02	9.284+00	1.603+04	5.958+01	0.4
$11d_{5/2}$	4.412+00	1.158+03	4.340–02	1.451+02	9.150+00	1.601+04	5.319+01	1.1
$12d_{5/2}$	3.680+00	1.157+03	4.797–02	1.379+02	9.023+00	1.601+04	4.614+01	2.4
$4f_{5/2}$	3.125+01	7.506+02	6.336–01	9.249–01	1.611+01	1.106+02	1.211+02	0.8
$5f_{5/2}$	2.005+01	5.881+02	5.162–01	8.092–02	1.824+01	9.203+01	1.272+02	1.8
$6f_{5/2}$	1.391+01	5.820+02	3.917–01	2.874–02	1.873+01	1.038+02	1.346+02	3.7
$7f_{5/2}$	1.020+01	4.589+02	8.070+00	1.162–02	1.372+01	7.856+01	4.357+01	4.2
$8f_{5/2}$	7.795+00	3.621+02	7.732+00	1.108–02	1.387+01	7.473+01	3.874+01	3.0
$9f_{5/2}$	6.149+00	3.605+02	8.859+00	5.975–03	1.377+01	7.419+01	3.750+01	2.5
$10f_{5/2}$	4.974+00	3.593+02	8.849+00	4.353–03	1.378+01	7.416+01	3.750+01	2.5
$11f_{5/2}$	4.106+00	2.840+02	1.021+01	2.975–03	1.367+01	7.263+01	3.315+01	1.2
$12f_{5/2}$	3.446+00	2.833+02	1.064+01	2.198–03	1.363+01	7.322+01	3.199+01	0.7
$4f_{7/2}$	3.125+01	7.506+02	7.350–01	1.132+00	1.616+01	9.434+01	1.046+02	0.8
$5f_{7/2}$	2.005+01	5.881+02	5.998–01	1.163–01	1.828+01	7.874+01	1.099+02	1.8
$6f_{7/2}$	1.391+01	5.820+02	4.978–01	5.762–02	1.878+01	8.058+01	1.052+02	3.8
$7f_{7/2}$	1.020+01	4.589+02	1.194+01	1.298–02	1.371+01	5.397+01	2.969+01	4.2
$8f_{7/2}$	7.795+00	3.621+02	1.070+01	1.258–02	1.387+01	5.445+01	2.810+01	3.0
$9f_{7/2}$	6.149+00	3.605+02	1.207+01	6.668–03	1.376+01	5.479+01	2.757+01	2.5
$10f_{7/2}$	4.974+00	3.593+02	1.212+01	4.989–03	1.378+01	5.460+01	2.709+01	2.7
$11f_{7/2}$	4.106+00	2.840+02	1.346+01	3.251–03	1.367+01	5.551+01	2.512+01	1.2
$12f_{7/2}$	3.446+00	2.833+02	1.426+01	2.186–03	1.362+01	5.560+01	2.489+01	1.3
$5g_{7/2}$	1.961+01	2.995+02	8.590+00	3.747–01	1.399+01	2.551+01	2.028+01	0.6
$6g_{7/2}$	1.362+01	2.347+02	5.165+00	6.110–01	1.618+01	2.294+01	2.931+01	0.5
$7g_{7/2}$	1.001+01	1.846+02	5.326+00	3.468–01	1.663+01	2.202+01	2.899+01	0.5
$8g_{7/2}$	7.661+00	1.822+02	5.791+00	1.781–01	1.665+01	2.209+01	2.850+01	0.4
$9g_{7/2}$	6.053+00	1.806+02	6.335+00	9.171–02	1.656+01	2.251+01	2.834+01	0.2

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
10g <sub>7/2</sub>	4.903+00	1.428+02	6.876+00	5.007–02	1.644+01	2.291+01	2.834+01	0.3
11g <sub>7/2</sub>	4.052+00	1.419+02	7.463+00	2.902–02	1.634+01	2.289+01	2.841+01	0.5
12g <sub>7/2</sub>	3.405+00	1.413+02	8.088+00	1.702–02	1.625+01	2.266+01	2.894+01	0.8
5g <sub>9/2</sub>	1.961+01	2.995+02	7.544+00	4.542–01	1.409+01	2.742+01	2.247+01	0.6
6g <sub>9/2</sub>	1.362+01	2.347+02	5.014+00	5.876–01	1.616+01	2.381+01	3.034+01	0.5
7g <sub>9/2</sub>	1.001+01	1.846+02	6.020+00	3.797–01	1.662+01	1.954+01	2.569+01	0.5
8g <sub>9/2</sub>	7.661+00	1.822+02	6.515+00	1.932–01	1.664+01	1.977+01	2.539+01	0.4
9g <sub>9/2</sub>	6.053+00	1.806+02	7.169+00	9.889–02	1.654+01	2.003+01	2.514+01	0.2
10g <sub>9/2</sub>	4.903+00	1.428+02	7.602+00	5.759–02	1.646+01	2.046+01	2.508+01	0.2
11g <sub>9/2</sub>	4.052+00	1.419+02	8.542+00	3.320–02	1.635+01	1.988+01	2.442+01	0.5
12g <sub>9/2</sub>	3.404+00	1.413+02	8.877+00	1.838–02	1.625+01	2.064+01	2.614+01	0.8
6h <sub>9/2</sub>	1.361+01	1.515+02	1.259+01	2.910–01	1.632+01	8.560+00	1.553+01	0.1
7h <sub>9/2</sub>	9.997+00	1.189+02	1.054+01	1.242+00	1.834+01	6.819+00	1.633+01	0.2
8h <sub>9/2</sub>	7.654+00	1.165+02	1.008+01	1.207+00	1.903+01	6.689+00	1.705+01	0.3
9h <sub>9/2</sub>	6.047+00	9.204+01	1.131+01	8.126–01	1.918+01	6.210+00	1.608+01	0.1
10h <sub>9/2</sub>	4.898+00	9.089+01	1.226+01	4.502–01	1.915+01	6.155+00	1.605+01	0.3
11h <sub>9/2</sub>	4.048+00	9.004+01	1.564+01	1.760–01	1.902+01	5.293+00	1.709+01	0.4
12h <sub>9/2</sub>	3.402+00	8.940+01	2.357+01	6.933–02	1.892+01	3.766+00	1.728+01	0.7
6h <sub>11/2</sub>	1.361+01	1.515+02	1.308+01	2.884–01	1.632+01	8.234+00	1.491+01	0.1
7h <sub>11/2</sub>	9.997+00	1.189+02	9.772+00	1.232+00	1.837+01	7.288+00	1.752+01	0.3
8h <sub>11/2</sub>	7.654+00	1.165+02	1.055+01	1.386+00	1.905+01	6.331+00	1.580+01	0.5
9h <sub>11/2</sub>	6.047+00	9.204+01	9.392+00	6.150–01	1.915+01	7.540+00	1.980+01	0.1
10h <sub>11/2</sub>	4.898+00	9.089+01	1.001+01	3.532–01	1.914+01	7.552+00	1.982+01	0.4
11h <sub>11/2</sub>	4.048+00	9.004+01	1.500+01	1.543–01	1.901+01	5.533+00	1.853+01	0.4
12h <sub>11/2</sub>	3.402+00	8.940+01	1.671+01	4.989–02	1.894+01	5.277+00	2.464+01	0.7
7i <sub>11/2</sub>	9.996+00	9.599+01	1.137+01	7.333–02	4.373+01	1.375+01	1.399+02	0.8
8i <sub>11/2</sub>	7.653+00	7.557+01	8.756–02	2.713+03	4.336+01	1.873+01	1.384+02	0.8
9i <sub>11/2</sub>	6.047+00	7.396+01	6.081+00	1.821+00	2.128+01	7.510+00	2.601+01	0.3
10i <sub>11/2</sub>	4.898+00	7.282+01	5.935+00	1.422+00	2.158+01	7.738+00	2.637+01	0.5
11i <sub>11/2</sub>	4.048+00	7.197+01	9.640+00	7.804–01	2.152+01	5.193+00	2.261+01	0.2
12i <sub>11/2</sub>	3.402+00	5.704+01	1.030+01	5.175–01	2.154+01	5.052+00	2.264+01	0.3
7i <sub>13/2</sub>	9.996+00	9.599+01	7.791+00	2.682–01	1.830+01	9.317+00	2.634+01	0.2
8i <sub>13/2</sub>	7.653+00	7.557+01	5.827+00	1.661+00	2.051+01	8.359+00	2.691+01	0.2
9i <sub>13/2</sub>	6.047+00	7.396+01	6.087+00	1.845+00	2.128+01	7.493+00	2.589+01	0.3
10i <sub>13/2</sub>	4.898+00	7.282+01	6.095+00	1.415+00	2.157+01	7.554+00	2.608+01	0.4
11i <sub>13/2</sub>	4.048+00	7.197+01	8.238+00	6.651–01	2.154+01	6.043+00	2.626+01	0.1
12i <sub>13/2</sub>	3.402+00	5.704+01	8.361+00	4.552–01	2.155+01	6.198+00	2.623+01	0.4
Cr <sup>13+</sup>								
3s <sub>1/2</sub>	3.837+02	5.071+04	2.627+00	1.187+02	4.480+00	1.995+03	1.596–01	1.0
4s <sub>1/2</sub>	2.007+02	3.995+04	4.795+00	6.456+01	3.881+00	2.002+03	7.890+00	1.7
5s <sub>1/2</sub>	1.234+02	2.492+04	3.326–01	5.525+03	3.552+00	5.000+04	4.884+00	2.2
6s <sub>1/2</sub>	8.353+01	1.966+04	4.761–01	2.740+03	3.383+00	5.001+04	1.729+01	2.3
7s <sub>1/2</sub>	6.028+01	1.552+04	7.028–01	1.192+03	3.249+00	4.999+04	1.013+01	2.3
8s <sub>1/2</sub>	4.555+01	1.226+04	1.065+00	4.641+02	3.144+00	4.999+04	6.678+00	2.3
9s <sub>1/2</sub>	3.562+01	9.682+03	1.676+00	1.629+02	3.054+00	4.999+04	4.654+00	2.1
10s <sub>1/2</sub>	2.862+01	7.647+03	8.111–01	5.412+02	3.008+00	1.600+05	5.834+00	1.9
11s <sub>1/2</sub>	2.350+01	6.040+03	1.181+00	2.137+02	2.959+00	1.600+05	4.716+00	1.7
12s <sub>1/2</sub>	1.964+01	6.036+03	1.140+00	1.841+02	2.944+00	1.600+05	4.749+00	1.9
3p <sub>1/2</sub>	3.536+02	1.993+04	5.556+01	1.553+01	6.098+00	5.047+01	9.344–01	0.3
4p <sub>1/2</sub>	1.888+02	1.565+04	3.827+00	9.019+01	6.655+00	6.048+02	3.629–02	0.3
5p <sub>1/2</sub>	1.176+02	1.233+04	5.265+00	5.283+01	6.207+00	6.082+02	3.807+00	0.7
6p <sub>1/2</sub>	8.026+01	9.726+03	6.775+00	2.932+01	5.914+00	6.078+02	3.391+00	1.1
7p <sub>1/2</sub>	5.826+01	7.676+03	4.278–03	1.711+06	5.880+00	1.054+06	2.520+03	1.2
8p <sub>1/2</sub>	4.422+01	6.061+03	4.648–03	1.491+06	5.796+00	1.054+06	2.520+03	1.0
9p <sub>1/2</sub>	3.470+01	4.787+03	4.636–03	1.232+06	5.766+00	1.054+06	2.520+03	1.2
10p <sub>1/2</sub>	2.796+01	4.780+03	9.861–01	2.682+02	5.461+00	8.009+03	8.749+00	1.7
11p <sub>1/2</sub>	2.300+01	3.776+03	1.208+00	1.711+02	5.348+00	8.011+03	6.329+00	2.0
12p <sub>1/2</sub>	1.926+01	3.772+03	8.276–03	9.181+05	5.404+00	1.053+06	7.320+02	2.0
3p <sub>3/2</sub>	3.518+02	1.993+04	4.806+01	1.846+01	6.278+00	5.002+01	9.967–01	0.3
4p <sub>3/2</sub>	1.881+02	1.565+04	7.002+00	5.448+01	6.522+00	3.420+02	3.001–03	0.5
5p <sub>3/2</sub>	1.172+02	1.233+04	9.324+00	2.744+01	6.126+00	3.439+02	2.999+00	0.9
6p <sub>3/2</sub>	8.007+01	9.726+03	1.295+01	1.346+01	5.748+00	3.413+02	2.243+00	1.3
7p <sub>3/2</sub>	5.815+01	7.676+03	1.223+00	2.718+02	5.865+00	3.524+03	1.178+01	1.2
8p <sub>3/2</sub>	4.414+01	6.061+03	1.515+00	1.773+02	5.683+00	3.518+03	8.311+00	1.4
9p <sub>3/2</sub>	3.465+01	4.787+03	1.904+00	1.101+02	5.518+00	3.522+03	5.832+00	1.6
10p <sub>3/2</sub>	2.792+01	4.780+03	9.170–01	3.116+02	5.465+00	8.010+03	9.433+00	2.0
11p <sub>3/2</sub>	2.298+01	3.776+03	1.197+00	1.833+02	5.330+00	8.006+03	6.351+00	1.9
12p <sub>3/2</sub>	1.924+01	3.772+03	1.372+00	1.264+02	5.250+00	8.004+03	5.050+00	2.4
3d <sub>3/2</sub>	3.107+02	7.929+03	1.663+01	7.505+02	6.448+00	1.419+02	4.486+00	0.6
4d <sub>3/2</sub>	1.731+02	6.190+03	1.279+01	2.363+02	7.272+00	1.397+02	6.701–03	0.4
5d <sub>3/2</sub>	1.100+02	4.862+03	1.209+01	1.011+02	7.450+00	1.481+02	1.062+00	0.2
6d <sub>3/2</sub>	7.602+01	3.829+03	1.254+01	4.998+01	7.468+00	1.489+02	1.601+00	0.1
7d <sub>3/2</sub>	5.565+01	3.020+03	4.226+00	1.254+02	7.828+00	3.782+02	2.948+00	0.2

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$8d_{3/2}$	4.249+01	3.006+03	4.719+00	7.730+01	7.697+00	3.772+02	2.719+00	0.2
$9d_{3/2}$	3.350+01	2.374+03	5.539+00	4.843+01	7.497+00	3.780+02	2.209+00	0.6
$10d_{3/2}$	2.709+01	2.368+03	8.165–01	5.701+02	7.757+00	2.238+03	9.082+00	0.6
$11d_{3/2}$	2.236+01	1.871+03	9.205–01	4.237+02	7.630+00	2.240+03	7.111+00	1.1
$12d_{3/2}$	1.877+01	1.868+03	1.421+00	2.070+02	7.399+00	1.900+03	4.102+00	1.9
$3d_{5/2}$	3.104+02	7.929+03	1.577+01	8.255+02	6.499+00	1.421+02	4.721+00	0.6
$4d_{5/2}$	1.730+02	6.190+03	1.232+01	2.489+02	7.312+00	1.396+02	3.957–02	0.4
$5d_{5/2}$	1.100+02	4.862+03	1.270+01	9.398+01	7.454+00	1.383+02	1.189+00	0.2
$6d_{5/2}$	7.599+01	3.829+03	1.506+01	4.030+01	7.284+00	1.383+02	1.409+00	0.4
$7d_{5/2}$	5.563+01	3.020+03	4.281+00	1.226+02	7.838+00	3.667+02	2.967+00	0.2
$8d_{5/2}$	4.248+01	3.006+03	4.795+00	7.556+01	7.701+00	3.659+02	2.707+00	0.3
$9d_{5/2}$	3.349+01	2.374+03	5.683+00	4.689+01	7.491+00	3.655+02	2.170+00	0.7
$10d_{5/2}$	2.708+01	2.368+03	9.600–01	4.487+02	7.748+00	1.895+03	7.852+00	0.7
$11d_{5/2}$	2.235+01	1.871+03	1.098+00	3.276+02	7.608+00	1.899+03	6.043+00	1.0
$12d_{5/2}$	1.876+01	1.868+03	1.280+00	2.334+02	7.463+00	1.900+03	4.603+00	1.5
$4f_{5/2}$	1.671+02	2.508+03	3.818+01	1.071+02	5.098+00	2.601+02	4.365–01	0.3
$5f_{5/2}$	1.070+02	2.448+03	4.574+01	2.499+01	6.114+00	8.542+01	6.979–01	0.4
$6f_{5/2}$	7.427+01	1.923+03	2.864+01	4.237+01	7.644+00	5.240+01	8.140–01	0.6
$7f_{5/2}$	5.455+01	1.515+03	1.540+01	7.446+01	8.995+00	5.314+01	1.106+00	0.6
$8f_{5/2}$	4.176+01	1.502+03	8.412+00	9.940+01	9.720+00	7.626+01	1.567+00	0.7
$9f_{5/2}$	3.299+01	1.186+03	3.860+00	1.492+02	1.023+01	1.414+02	2.691+00	0.4
$10f_{5/2}$	2.672+01	1.180+03	4.424+00	9.910+01	9.984+00	1.415+02	2.205+00	0.5
$11f_{5/2}$	2.208+01	9.329+02	5.081+00	6.827+01	9.714+00	1.425+02	1.774+00	0.9
$12f_{5/2}$	1.855+01	9.293+02	2.691+00	1.159+02	9.832+00	2.723+02	2.540+00	1.3
$4f_{7/2}$	1.670+02	2.508+03	3.722+01	1.168+02	5.115+00	2.601+02	3.573–01	0.3
$5f_{7/2}$	1.069+02	2.448+03	4.611+01	2.449+01	6.097+00	8.540+01	6.958–01	0.4
$6f_{7/2}$	7.426+01	1.923+03	3.768+01	2.088+01	6.636+00	8.698+01	6.643–01	1.1
$7f_{7/2}$	5.455+01	1.515+03	1.567+01	7.265+01	8.982+00	5.228+01	1.103+00	0.6
$8f_{7/2}$	4.176+01	1.502+03	8.258+00	1.015+02	9.746+00	7.665+01	1.593+00	0.7
$9f_{7/2}$	3.299+01	1.186+03	2.429+00	2.327+02	1.041+01	2.094+02	3.911+00	0.5
$10f_{7/2}$	2.672+01	1.180+03	2.697+00	1.625+02	1.023+01	2.097+02	3.296+00	0.5
$11f_{7/2}$	2.208+01	9.329+02	3.121+00	1.149+02	9.979+00	2.097+02	2.594+00	0.8
$12f_{7/2}$	1.855+01	9.293+02	3.734+00	8.052+01	9.668+00	2.095+02	1.956+00	1.4
$5g_{7/2}$	1.067+02	1.260+03	4.446+01	3.261+01	6.350+00	5.059+01	6.955–01	0.4
$6g_{7/2}$	7.410+01	9.849+02	1.893+01	3.688+02	1.039+01	1.978+01	9.250–01	0.2
$7g_{7/2}$	5.444+01	9.652+02	1.143+01	4.765+02	1.222+01	2.158+01	1.324+00	0.3
$8g_{7/2}$	4.168+01	7.610+02	3.516+00	5.134+02	1.378+01	5.219+01	3.347+00	0.1
$9g_{7/2}$	3.293+01	7.522+02	3.854+00	3.124+02	1.360+01	5.255+01	2.933+00	0.2
$10g_{7/2}$	2.667+01	7.460+02	4.445+00	2.092+02	1.320+01	5.314+01	2.310+00	0.6
$11g_{7/2}$	2.205+01	5.901+02	8.347–01	3.180+02	1.368+01	2.637+02	9.760+00	0.7
$12g_{7/2}$	1.852+01	5.866+02	9.486–01	2.881+02	1.336+01	2.635+02	7.380+00	1.1
$5g_{9/2}$	1.067+02	1.260+03	4.436+01	3.285+01	6.349+00	5.073+01	6.946–01	0.4
$6g_{9/2}$	7.409+01	9.849+02	4.167+01	2.399+01	7.030+00	4.990+01	5.757–01	1.3
$7g_{9/2}$	5.444+01	9.652+02	8.572+00	6.357+02	1.262+01	2.613+01	1.547+00	0.3
$8g_{9/2}$	4.168+01	7.610+02	9.302+00	3.204+02	1.260+01	2.629+01	1.464+00	0.3
$9g_{9/2}$	3.293+01	7.522+02	1.440+00	3.817+02	1.408+01	1.261+02	7.296+00	0.2
$10g_{9/2}$	2.667+01	7.460+02	1.615+00	2.859+02	1.382+01	1.253+02	5.911+00	0.5
$11g_{9/2}$	2.204+01	5.901+02	1.888+00	2.318+02	1.343+01	1.245+02	4.417+00	0.8
$12g_{9/2}$	1.852+01	5.866+02	2.208+00	1.875+02	1.302+01	1.249+02	3.293+00	1.3
$6h_{9/2}$	7.409+01	6.422+02	1.344+01	2.308+03	1.285+01	1.259+01	1.731+00	0.4
$7h_{9/2}$	5.443+01	6.225+02	1.421+01	1.331+03	1.360+01	1.197+01	1.156+00	0.1
$8h_{9/2}$	4.167+01	6.098+02	1.107+01	1.287+03	1.493+01	1.285+01	1.298+00	0.2
$9h_{9/2}$	3.293+01	4.816+02	6.180+00	1.054+03	1.610+01	2.012+01	1.926+00	0.2
$10h_{9/2}$	2.667+01	4.753+02	2.378+00	5.921+02	1.681+01	4.947+01	4.097+00	0.3
$11h_{9/2}$	2.204+01	4.707+02	2.769+00	4.407+02	1.635+01	4.895+01	3.141+00	0.7
$12h_{9/2}$	1.852+01	3.729+02	3.489+00	3.280+02	1.565+01	4.778+01	2.195+00	1.0
$6h_{11/2}$	7.408+01	6.422+02	1.350+01	2.287+03	1.282+01	1.258+01	1.710+00	0.4
$7h_{11/2}$	5.443+01	6.225+02	1.482+01	1.139+03	1.332+01	1.235+01	1.087+00	0.1
$8h_{11/2}$	4.167+01	6.098+02	1.360+01	8.261+02	1.404+01	1.282+01	1.054+00	0.3
$9h_{11/2}$	3.293+01	4.816+02	2.732+00	9.687+02	1.689+01	3.989+01	3.943+00	0.1
$10h_{11/2}$	2.667+01	4.753+02	3.079+00	6.311+02	1.660+01	3.965+01	3.210+00	0.4
$11h_{11/2}$	2.204+01	4.707+02	2.582+00	4.352+02	1.642+01	5.168+01	3.382+00	0.7
$12h_{11/2}$	1.852+01	3.729+02	3.283+00	3.330+02	1.568+01	5.054+01	2.302+00	1.0
$7i_{11/2}$	5.443+01	4.088+02	1.486+01	1.274+03	1.336+01	1.219+01	1.097+00	0.1
$8i_{11/2}$	4.167+01	3.960+02	1.743+01	5.879+02	1.347+01	1.220+01	7.700–01	0.4
$9i_{11/2}$	3.293+01	3.873+02	8.193+00	3.301+03	1.730+01	1.279+01	1.327+00	0.2
$10i_{11/2}$	2.667+01	3.810+02	4.893+00	2.663+03	1.875+01	1.805+01	1.994+00	0.2
$11i_{11/2}$	2.204+01	3.019+02	3.936+00	1.541+03	1.878+01	2.401+01	2.154+00	0.3
$12i_{11/2}$	1.852+01	2.984+02	3.026+00	9.551+02	1.877+01	3.315+01	2.475+00	0.6
$7i_{13/2}$	5.443+01	4.088+02	1.548+01	1.018+03	1.304+01	1.279+01	1.032+00	0.1
$8i_{13/2}$	4.167+01	3.960+02	1.425+01	1.476+03	1.476+01	1.080+01	9.316–01	0.2
$9i_{13/2}$	3.292+01	3.873+02	1.029+01	2.693+03	1.685+01	1.084+01	1.137+00	0.3
$10i_{13/2}$	2.667+01	3.810+02	4.655+00	2.612+03	1.874+01	1.910+01	2.037+00	0.2
$11i_{13/2}$	2.204+01	3.019+02	3.788+00	1.533+03	1.885+01	2.462+01	2.241+00	0.3
$12i_{13/2}$	1.852+01	2.984+02	3.908+00	9.991+02	1.839+01	2.741+01	1.931+00	0.6

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av.}} \%$
$\text{Cr}^{21+}$								
$2s_{1/2}$	1.722+03	5.205+04	1.328+00	2.654+02	5.325+00	2.011+03	2.571+00	0.3
$3s_{1/2}$	7.540+02	5.108+04	3.248+00	4.718+02	4.066+00	2.011+03	1.337+00	0.2
$4s_{1/2}$	4.210+02	5.075+04	4.710+00	2.401+02	3.696+00	2.004+03	1.525+01	0.5
$5s_{1/2}$	2.683+02	4.002+04	6.668+00	1.122+02	3.429+00	2.005+03	8.769+00	0.8
$6s_{1/2}$	1.857+02	3.158+04	9.321+00	4.956+01	3.228+00	2.008+03	5.304+00	1.1
$7s_{1/2}$	1.362+02	2.493+04	1.302+01	2.124+01	3.063+00	2.008+03	3.482+00	1.3
$8s_{1/2}$	1.041+02	1.968+04	6.450–02	4.846+05	3.048+00	4.930+05	1.925+02	1.6
$9s_{1/2}$	8.214+01	1.555+04	7.226–02	3.150+05	3.011+00	4.930+05	1.926+02	1.3
$10s_{1/2}$	6.647+01	1.228+04	7.392–02	2.363+05	2.995+00	4.930+05	1.926+02	1.0
$11s_{1/2}$	5.489+01	9.701+03	1.247–01	8.719+04	2.893+00	4.929+05	6.913+01	1.2
$12s_{1/2}$	4.609+01	9.692+03	1.259–01	6.899+04	2.882+00	4.929+05	6.916+01	1.2
$2p_{1/2}$	1.677+03	5.200+04	3.594+02	8.595+00	2.832+00	1.030+02	1.133+00	0.4
$3p_{1/2}$	7.416+02	3.213+04	1.899+02	6.312+00	4.426+00	4.381+01	1.016+00	0.3
$4p_{1/2}$	4.159+02	2.521+04	6.364+01	1.199+01	5.538+00	6.845+01	1.691+00	0.3
$5p_{1/2}$	2.657+02	1.985+04	8.897+00	7.758+01	6.024+00	3.945+02	6.200+00	0.2
$6p_{1/2}$	1.843+02	1.565+04	1.047+01	4.308+01	5.824+00	3.939+02	5.080+00	0.4
$7p_{1/2}$	1.352+02	1.235+04	1.312+01	2.423+01	5.571+00	3.929+02	3.552+00	0.8
$8p_{1/2}$	1.035+02	9.749+03	1.667+01	1.346+01	5.326+00	3.933+02	2.525+00	1.1
$9p_{1/2}$	8.170+01	7.700+03	2.906–01	8.473+03	5.503+00	2.084+04	7.468+01	1.0
$10p_{1/2}$	6.615+01	7.684+03	3.243–01	6.531+03	5.411+00	2.082+04	5.628+01	1.4
$11p_{1/2}$	5.465+01	6.071+03	3.928–01	4.660+03	5.290+00	2.082+04	3.737+01	1.3
$12p_{1/2}$	4.591+01	6.063+03	4.199–01	3.641+03	5.237+00	2.081+04	3.066+01	1.7
$2p_{3/2}$	1.666+03	5.199+04	4.712+02	4.381+00	2.541+00	1.028+02	1.030+00	0.2
$3p_{3/2}$	7.382+02	3.213+04	2.655+01	9.400+01	6.119+00	1.006+02	6.580–02	0.7
$4p_{3/2}$	4.145+02	2.521+04	3.145+01	2.844+01	6.000+00	9.953+01	2.602+00	0.2
$5p_{3/2}$	2.649+02	1.985+04	1.952+01	2.882+01	5.902+00	1.825+02	3.460+00	0.4
$6p_{3/2}$	1.838+02	1.565+04	2.392+01	1.446+01	5.652+00	1.810+02	2.735+00	0.6
$7p_{3/2}$	1.350+02	1.235+04	9.164+00	4.047+01	5.666+00	4.982+02	4.828+00	0.8
$8p_{3/2}$	1.033+02	9.749+03	1.158+01	2.340+01	5.423+00	5.006+02	3.326+00	1.1
$9p_{3/2}$	8.158+01	7.700+03	1.441+01	1.361+01	5.217+00	5.007+02	2.433+00	1.4
$10p_{3/2}$	6.606+01	7.684+03	9.610–01	9.930+02	5.392+00	6.852+03	1.991+01	1.4
$11p_{3/2}$	5.458+01	6.071+03	1.131+00	6.906+02	5.280+00	6.854+03	1.412+01	1.5
$12p_{3/2}$	4.585+01	6.063+03	1.331+00	4.699+02	5.183+00	6.858+03	1.025+01	1.6
$3d_{3/2}$	7.335+02	1.620+04	7.930+00	2.255+04	6.430+00	2.772+02	1.377–01	0.8
$4d_{3/2}$	4.125+02	1.006+04	3.668+00	1.010+03	8.832+00	2.735+02	3.102–01	0.5
$5d_{3/2}$	2.639+02	7.882+03	4.173+00	3.302+02	8.832+00	2.736+02	8.173–01	0.2
$6d_{3/2}$	1.833+02	7.801+03	4.185+00	1.306+02	9.024+00	2.681+02	1.138+01	0.1
$7d_{3/2}$	1.346+02	6.151+03	4.802+00	8.653+01	8.780+00	2.689+02	8.899+00	0.4
$8d_{3/2}$	1.030+02	4.855+03	6.017+00	5.862+01	8.461+00	2.567+02	6.089+00	0.7
$9d_{3/2}$	8.141+01	4.833+03	7.180+00	4.092+01	8.186+00	2.532+02	4.424+00	1.0
$10d_{3/2}$	6.593+01	3.819+03	2.530+00	1.285+02	8.124+00	7.817+02	9.472+00	1.1
$11d_{3/2}$	5.449+01	3.807+03	2.870+00	9.992+01	7.945+00	7.828+02	7.236+00	1.4
$12d_{3/2}$	4.578+01	3.010+03	3.389+00	7.485+01	7.738+00	7.834+02	5.286+00	1.7
$3d_{5/2}$	7.324+02	1.295+04	6.928+00	2.571+04	6.607+00	2.770+02	5.693–02	0.5
$4d_{5/2}$	4.121+02	1.006+04	3.473+00	1.004+03	8.902+00	2.766+02	5.011–02	0.5
$5d_{5/2}$	2.637+02	7.882+03	3.992+00	3.349+02	8.875+00	2.771+02	2.864–01	0.2
$6d_{5/2}$	1.831+02	7.801+03	3.778+00	1.337+02	9.102+00	2.842+02	1.296+01	0.1
$7d_{5/2}$	1.345+02	6.151+03	4.411+00	9.017+01	8.837+00	2.821+02	9.835+00	0.4
$8d_{5/2}$	1.030+02	4.855+03	5.274+00	6.563+01	8.517+00	2.820+02	6.951+00	0.7
$9d_{5/2}$	8.137+01	4.833+03	6.187+00	4.767+01	8.243+00	2.824+02	5.081+00	1.0
$10d_{5/2}$	6.591+01	3.819+03	7.604+00	3.334+01	7.925+00	2.835+02	3.556+00	1.3
$11d_{5/2}$	5.447+01	3.807+03	3.741–01	1.603+03	8.080+00	5.505+03	5.175+01	1.4
$12d_{5/2}$	4.577+01	3.799+03	4.226–01	1.424+03	7.926+00	5.496+03	3.872+01	1.5
$4f_{5/2}$	4.120+02	6.429+03	1.308+01	3.823+03	9.158+00	6.567+01	5.832+00	0.4
$5f_{5/2}$	2.637+02	5.016+03	1.073+01	6.379+02	1.084+01	5.937+01	1.476+00	0.1
$6f_{5/2}$	1.831+02	3.936+03	9.401+00	1.930+02	1.163+01	6.094+01	4.435+00	0.0
$7f_{5/2}$	1.345+02	3.887+03	1.037+01	9.740+01	1.153+01	6.127+01	3.986+00	0.3
$8f_{5/2}$	1.030+02	3.067+03	1.186+01	5.935+01	1.124+01	6.145+01	3.229+00	0.5
$9f_{5/2}$	8.136+01	3.045+03	1.408+01	3.884+01	1.081+01	6.179+01	2.435+00	0.8
$10f_{5/2}$	6.590+01	2.407+03	1.343+00	1.542+02	1.123+01	6.055+02	1.889+01	0.8
$11f_{5/2}$	5.446+01	2.395+03	1.520+00	1.385+02	1.098+01	5.990+02	1.449+01	1.1
$12f_{5/2}$	4.576+01	2.387+03	1.705+00	1.236+02	1.076+01	5.966+02	1.121+01	1.4
$4f_{7/2}$	4.117+02	6.428+03	1.209+01	4.029+03	9.340+00	6.596+01	6.747+00	0.4
$5f_{7/2}$	2.635+02	5.015+03	7.664+00	8.136+02	1.099+01	7.930+01	1.108+00	0.1
$6f_{7/2}$	1.830+02	3.936+03	7.202+00	2.094+02	1.177+01	7.649+01	5.695+00	0.0
$7f_{7/2}$	1.345+02	3.887+03	7.515+00	1.009+02	1.184+01	7.693+01	5.738+00	0.2
$8f_{7/2}$	1.029+02	3.067+03	8.965+00	6.705+01	1.142+01	7.702+01	4.189+00	0.4
$9f_{7/2}$	8.134+01	3.045+03	1.041+01	4.649+01	1.103+01	7.792+01	3.190+00	0.8
$10f_{7/2}$	6.588+01	2.407+03	5.087+00	6.043+01	1.099+01	1.713+02	5.233+00	0.9
$11f_{7/2}$	5.445+01	2.395+03	1.512+00	1.391+02	1.099+01	5.990+02	1.455+01	1.1
$12f_{7/2}$	4.575+01	2.387+03	1.692+00	1.238+02	1.077+01	5.965+02	1.132+01	1.4
$5g_{7/2}$	2.635+02	3.228+03	1.172+01	5.869+03	1.067+01	5.808+01	1.413+00	0.2

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$6g_{7/2}$	1.830+02	2.524+03	7.243+00	1.466+03	1.308+01	5.942+01	8.188–01	0.1
$7g_{7/2}$	1.345+02	2.475+03	5.219+00	4.055+02	1.427+01	7.004+01	5.760+00	0.0
$8g_{7/2}$	1.029+02	1.952+03	5.574+00	2.015+02	1.433+01	6.992+01	5.480+00	0.2
$9g_{7/2}$	8.134+01	1.930+03	5.762+00	1.178+02	1.438+01	6.982+01	5.383+00	0.3
$10g_{7/2}$	6.588+01	1.526+03	7.063+00	9.275+01	1.379+01	6.935+01	3.708+00	0.6
$11g_{7/2}$	5.445+01	1.515+03	8.288+00	6.886+01	1.339+01	6.820+01	2.850+00	0.8
$12g_{7/2}$	4.575+01	1.506+03	9.715+00	5.136+01	1.296+01	6.789+01	2.186+00	1.2
$5g_{9/2}$	2.635+02	3.227+03	1.102+01	6.343+03	1.082+01	5.817+01	1.464+00	0.1
$6g_{9/2}$	1.830+02	2.524+03	6.969+00	1.364+03	1.330+01	5.830+01	2.883+00	0.0
$7g_{9/2}$	1.344+02	2.475+03	5.992+00	3.940+02	1.426+01	6.090+01	5.238+00	0.0
$8g_{9/2}$	1.029+02	1.952+03	6.321+00	1.944+02	1.436+01	6.075+01	5.041+00	0.2
$9g_{9/2}$	8.133+01	1.930+03	6.865+00	1.237+02	1.418+01	6.149+01	4.374+00	0.4
$10g_{9/2}$	6.587+01	1.526+03	8.236+00	8.995+01	1.369+01	6.075+01	3.214+00	0.6
$11g_{9/2}$	5.444+01	1.515+03	9.549+00	6.561+01	1.327+01	6.087+01	2.497+00	0.9
$12g_{9/2}$	4.575+01	1.506+03	6.507+00	6.144+01	1.327+01	9.324+01	3.173+00	1.1
$6h_{9/2}$	1.830+02	1.643+03	7.778+00	1.174+04	1.294+01	5.812+01	1.639+00	0.2
$7h_{9/2}$	1.344+02	1.595+03	3.510+00	1.497+03	1.685+01	6.495+01	1.071+01	0.4
$8h_{9/2}$	1.029+02	1.256+03	3.280+00	4.053+02	1.778+01	6.485+01	1.053+01	0.4
$9h_{9/2}$	8.133+01	1.235+03	3.726+00	3.275+02	1.711+01	7.027+01	6.710+00	0.1
$10h_{9/2}$	6.587+01	1.219+03	3.812+00	1.881+02	1.723+01	7.033+01	6.640+00	0.2
$11h_{9/2}$	5.444+01	1.208+03	4.349+00	1.551+02	1.679+01	7.044+01	5.104+00	0.5
$12h_{9/2}$	4.575+01	9.565+02	5.109+00	1.298+02	1.631+01	6.935+01	3.840+00	0.6
$6h_{11/2}$	1.830+02	1.643+03	7.448+00	1.229+04	1.307+01	5.814+01	1.546+00	0.0
$7h_{11/2}$	1.344+02	1.595+03	5.567+00	2.837+03	1.534+01	5.557+01	1.484+00	0.1
$8h_{11/2}$	1.029+02	1.256+03	5.655+00	1.026+03	1.585+01	5.578+01	1.940+00	0.4
$9h_{11/2}$	8.132+01	1.235+03	4.816+00	3.596+02	1.699+01	5.540+01	5.233+00	0.1
$10h_{11/2}$	6.587+01	1.219+03	4.878+00	2.060+02	1.716+01	5.542+01	5.302+00	0.2
$11h_{11/2}$	5.444+01	1.208+03	5.888+00	1.671+02	1.661+01	5.368+01	3.813+00	0.5
$12h_{11/2}$	4.574+01	9.565+02	6.953+00	1.322+02	1.605+01	5.372+01	2.835+00	0.7
$7i_{11/2}$	1.344+02	1.045+03	5.531+00	2.142+04	1.524+01	5.755+01	7.894–01	0.1
$8i_{11/2}$	1.029+02	1.014+03	3.853+00	5.682+03	1.758+01	6.102+01	5.154–01	0.1
$9i_{11/2}$	8.132+01	9.921+02	3.294+00	1.636+03	1.879+01	6.373+01	3.867+00	0.2
$10i_{11/2}$	6.587+01	7.852+02	3.157+00	5.837+02	1.962+01	6.210+01	6.337+00	0.1
$11i_{11/2}$	5.444+01	7.738+02	3.264+00	3.416+02	1.975+01	6.190+01	6.196+00	0.2
$12i_{11/2}$	4.574+01	7.650+02	3.352+00	2.271+02	1.980+01	6.190+01	5.962+00	0.3
$7i_{13/2}$	1.344+02	1.045+03	5.426+00	2.081+04	1.539+01	5.671+01	2.162+00	0.0
$8i_{13/2}$	1.029+02	1.014+03	4.555+00	3.838+03	1.832+01	4.466+01	4.899+00	0.1
$9i_{13/2}$	8.131+01	9.921+02	5.407+00	1.582+03	1.892+01	3.761+01	3.674+00	0.1
$10i_{13/2}$	6.586+01	7.852+02	5.583+00	8.343+02	1.915+01	3.785+01	3.510+00	0.2
$11i_{13/2}$	5.443+01	7.737+02	5.723+00	5.016+02	1.931+01	3.779+01	3.506+00	0.2
$12i_{13/2}$	4.574+01	7.650+02	6.409+00	3.613+02	1.903+01	3.704+01	2.943+00	0.4
$\text{Cr}^{22+}$								
$1s_{1/2}$	7.490+03	5.782+04	1.807+00	6.185+04	4.173+00	2.013+03	1.351+00	0.1
$2s_{1/2}$	1.848+03	5.218+04	1.377+00	3.404+02	5.246+00	2.010+03	9.940+00	0.2
$3s_{1/2}$	8.147+02	5.114+04	3.305+00	5.392+02	4.036+00	2.009+03	9.553+00	0.2
$4s_{1/2}$	4.563+02	5.078+04	4.634+00	2.752+02	3.692+00	2.016+03	1.815+01	0.5
$5s_{1/2}$	2.913+02	4.004+04	6.559+00	1.305+02	3.420+00	2.028+03	9.902+00	0.8
$6s_{1/2}$	2.019+02	3.159+04	9.164+00	5.801+01	3.218+00	2.031+03	5.806+00	1.1
$7s_{1/2}$	1.481+02	2.494+04	1.289+01	2.462+01	3.051+00	2.033+03	3.711+00	1.3
$8s_{1/2}$	1.133+02	1.969+04	1.521+01	1.382+01	2.961+00	2.033+03	2.931+00	1.5
$9s_{1/2}$	8.945+01	1.555+04	7.513–02	3.610+05	2.986+00	4.921+05	1.940+02	1.3
$10s_{1/2}$	7.241+01	1.229+04	7.718–02	2.680+05	2.970+00	4.921+05	1.940+02	1.0
$11s_{1/2}$	5.981+01	1.227+04	1.110–01	1.276+05	2.890+00	4.920+05	9.060+01	1.4
$12s_{1/2}$	5.024+01	9.696+03	1.131–01	9.839+04	2.881+00	4.920+05	9.060+01	1.1
$2p_{1/2}$	1.825+03	5.215+04	4.233+02	6.640+00	2.696+00	1.036+02	1.079+00	0.3
$3p_{1/2}$	8.083+02	3.220+04	2.763+01	9.103+01	6.122+00	1.060+02	1.625–02	0.8
$4p_{1/2}$	4.536+02	2.525+04	3.255+01	2.799+01	5.991+00	1.063+02	2.522+00	0.3
$5p_{1/2}$	2.899+02	1.987+04	4.039+01	1.147+01	5.728+00	1.052+02	2.323+00	0.3
$6p_{1/2}$	2.011+02	1.567+04	3.656+00	1.853+02	5.979+00	1.065+03	1.414+01	0.4
$7p_{1/2}$	1.476+02	1.236+04	4.439+00	1.190+02	5.763+00	1.055+03	9.645+00	0.7
$8p_{1/2}$	1.130+02	9.759+03	5.418+00	7.575+01	5.562+00	1.057+03	6.584+00	0.9
$9p_{1/2}$	8.922+01	9.735+03	6.356+00	4.927+01	5.411+00	1.057+03	4.893+00	1.3
$10p_{1/2}$	7.224+01	7.690+03	7.967+00	2.952+01	5.232+00	1.057+03	3.465+00	1.5
$11p_{1/2}$	5.969+01	7.678+03	2.787–01	8.757+03	5.324+00	2.896+04	5.952+01	1.3
$12p_{1/2}$	5.014+01	6.067+03	3.149–01	6.670+03	5.243+00	2.894+04	4.380+01	1.7
$2p_{3/2}$	1.812+03	5.214+04	3.392+02	1.238+01	2.765+00	1.029+02	8.758–01	0.4
$3p_{3/2}$	8.043+02	3.220+04	3.931+02	1.621+00	3.043+00	1.014+02	7.271–01	1.4
$4p_{3/2}$	4.520+02	2.524+04	7.268+01	1.068+01	5.705+00	5.088+01	1.811+00	0.2
$5p_{3/2}$	2.890+02	1.987+04	7.281+00	8.741+01	6.248+00	4.101+02	9.867+00	0.2
$6p_{3/2}$	2.006+02	1.566+04	9.057+00	5.200+01	5.946+00	4.128+02	6.573+00	0.5
$7p_{3/2}$	1.473+02	1.236+04	1.140+01	3.053+01	5.669+00	4.147+02	4.399+00	0.9
$8p_{3/2}$	1.128+02	9.759+03	1.485+01	1.698+01	5.396+00	4.151+02	2.952+00	1.2
$9p_{3/2}$	8.907+01	9.735+03	1.448+01	1.405+01	5.266+00	4.903+02	2.614+00	1.5
$10p_{3/2}$	7.213+01	7.690+03	2.315–01	1.280+04	5.421+00	2.894+04	8.648+01	1.3
$11p_{3/2}$	5.961+01	6.076+03	2.728–01	9.651+03	5.309+00	2.896+04	5.951+01	1.4

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
12p <sub>3/2</sub>	5.008+01	6.067+03	3.163–01	7.114+03	5.220+00	2.897+04	4.239+01	1.5
3d <sub>3/2</sub>	8.017+02	1.627+04	7.993+00	2.220+04	6.544+00	2.763+02	2.754–01	0.6
4d <sub>3/2</sub>	4.509+02	1.266+04	3.932+00	9.234+02	8.855+00	2.751+02	1.391+00	0.6
5d <sub>3/2</sub>	2.885+02	9.934+03	4.444+00	3.010+02	8.866+00	2.752+02	1.380+00	0.2
6d <sub>3/2</sub>	2.003+02	7.818+03	4.349+00	1.183+02	9.082+00	2.740+02	1.227+01	0.1
7d <sub>3/2</sub>	1.471+02	6.164+03	5.058+00	8.061+01	8.803+00	2.753+02	9.265+00	0.4
8d <sub>3/2</sub>	1.126+02	6.129+03	6.029+00	5.658+01	8.522+00	2.698+02	6.706+00	0.7
9d <sub>3/2</sub>	8.898+01	4.841+03	7.482+00	3.952+01	8.194+00	2.645+02	4.590+00	1.0
10d <sub>3/2</sub>	7.207+01	4.824+03	8.186+00	3.036+01	7.963+00	2.811+02	3.653+00	1.4
11d <sub>3/2</sub>	5.956+01	3.812+03	8.405–02	1.512+04	8.067+00	2.743+04	2.440+02	1.3
12d <sub>3/2</sub>	5.004+01	3.803+03	9.149–02	1.450+04	7.950+00	2.746+04	1.928+02	1.6
3d <sub>5/2</sub>	8.005+02	1.626+04	7.340+00	2.437+04	6.646+00	2.764+02	3.966–01	0.5
4d <sub>5/2</sub>	4.504+02	1.266+04	3.741+00	9.070+02	8.933+00	2.755+02	3.090–01	0.5
5d <sub>5/2</sub>	2.882+02	9.934+03	4.274+00	3.009+02	8.918+00	2.758+02	1.711+00	0.3
6d <sub>5/2</sub>	2.001+02	7.818+03	4.001+00	1.197+02	9.152+00	2.856+02	1.366+01	0.2
7d <sub>5/2</sub>	1.470+02	6.164+03	4.724+00	8.241+01	8.861+00	2.835+02	1.010+01	0.4
8d <sub>5/2</sub>	1.126+02	6.129+03	5.482+00	6.072+01	8.573+00	2.859+02	7.429+00	0.7
9d <sub>5/2</sub>	8.893+01	4.841+03	6.668+00	4.443+01	8.242+00	2.863+02	5.114+00	1.0
10d <sub>5/2</sub>	7.203+01	4.824+03	7.745+00	3.223+01	7.994+00	2.884+02	3.842+00	1.4
11d <sub>5/2</sub>	5.953+01	3.812+03	3.889–01	1.587+03	8.076+00	5.808+03	5.401+01	1.3
12d <sub>5/2</sub>	5.002+01	3.803+03	4.383–01	1.416+03	7.924+00	5.796+03	4.039+01	1.5
4f <sub>5/2</sub>	4.503+02	6.467+03	1.401+01	3.559+03	9.203+00	6.578+01	5.904+00	0.4
5f <sub>5/2</sub>	2.882+02	5.040+03	9.631+00	6.785+02	1.091+01	7.107+01	1.141+00	0.1
6f <sub>5/2</sub>	2.001+02	4.952+03	8.086+00	1.945+02	1.170+01	7.644+01	5.399+00	0.1
7f <sub>5/2</sub>	1.470+02	3.900+03	8.632+00	9.529+01	1.171+01	7.655+01	5.256+00	0.2
8f <sub>5/2</sub>	1.126+02	3.865+03	9.598+00	6.109+01	1.145+01	7.817+01	4.311+00	0.4
9f <sub>5/2</sub>	8.893+01	3.053+03	1.150+01	4.237+01	1.100+01	7.869+01	3.145+00	0.7
10f <sub>5/2</sub>	7.203+01	3.036+03	2.821+00	8.380+01	1.120+01	3.155+02	1.023+01	0.9
11f <sub>5/2</sub>	5.953+01	2.400+03	3.308+00	7.330+01	1.086+01	3.155+02	7.399+00	1.0
12f <sub>5/2</sub>	5.002+01	2.391+03	3.730+00	6.132+01	1.061+01	3.166+02	5.737+00	1.4
4f <sub>7/2</sub>	4.500+02	6.467+03	1.380+01	3.673+03	9.224+00	6.571+01	5.817+00	0.4
5f <sub>7/2</sub>	2.881+02	5.040+03	8.964+00	7.041+02	1.098+01	7.435+01	1.388+00	0.1
6f <sub>7/2</sub>	2.000+02	4.952+03	9.385+00	2.370+02	1.120+01	7.605+01	2.263+00	0.4
7f <sub>7/2</sub>	1.470+02	3.900+03	8.512+00	9.534+01	1.174+01	7.662+01	5.342+00	0.2
8f <sub>7/2</sub>	1.125+02	3.865+03	9.294+00	6.174+01	1.148+01	7.954+01	4.456+00	0.4
9f <sub>7/2</sub>	8.890+01	3.053+03	1.135+01	4.283+01	1.101+01	7.906+01	3.174+00	0.7
10f <sub>7/2</sub>	7.201+01	3.036+03	6.093+00	5.045+01	1.102+01	1.538+02	4.906+00	1.0
11f <sub>7/2</sub>	5.951+01	2.400+03	7.348+00	3.934+01	1.060+01	1.547+02	3.497+00	1.2
12f <sub>7/2</sub>	5.001+01	2.391+03	8.401+00	3.005+01	1.032+01	1.557+02	2.742+00	1.5
5g <sub>7/2</sub>	2.881+02	3.252+03	1.218+01	5.690+03	1.080+01	5.831+01	1.433+00	0.0
6g <sub>7/2</sub>	2.000+02	3.164+03	8.204+00	1.302+03	1.306+01	5.765+01	1.260+00	0.1
7g <sub>7/2</sub>	1.470+02	2.488+03	6.975+00	3.664+02	1.417+01	5.853+01	4.803+00	0.0
8g <sub>7/2</sub>	1.125+02	2.453+03	7.027+00	1.678+02	1.448+01	5.809+01	5.251+00	0.1
9g <sub>7/2</sub>	8.890+01	1.938+03	7.764+00	1.143+02	1.411+01	6.074+01	4.178+00	0.3
10g <sub>7/2</sub>	7.201+01	1.921+03	8.778+00	8.153+01	1.377+01	6.105+01	3.344+00	0.6
11g <sub>7/2</sub>	5.951+01	1.908+03	1.021+01	6.001+01	1.335+01	6.074+01	2.583+00	0.9
12g <sub>7/2</sub>	5.001+01	1.510+03	3.655+00	7.341+01	1.355+01	1.698+02	5.938+00	0.9
5g <sub>9/2</sub>	2.880+02	3.252+03	1.213+01	5.746+03	1.081+01	5.820+01	1.370+00	0.0
6g <sub>9/2</sub>	2.000+02	3.164+03	7.025+00	1.135+03	1.357+01	5.928+01	4.747+00	0.2
7g <sub>9/2</sub>	1.469+02	2.488+03	7.125+00	3.994+02	1.398+01	6.001+01	4.072+00	0.2
8g <sub>9/2</sub>	1.125+02	2.453+03	7.772+00	2.020+02	1.397+01	5.979+01	3.832+00	0.5
9g <sub>9/2</sub>	8.889+01	1.938+03	8.388+00	1.207+02	1.388+01	5.972+01	3.620+00	0.5
10g <sub>9/2</sub>	7.200+01	1.921+03	9.056+00	8.088+01	1.376+01	5.905+01	3.264+00	0.6
11g <sub>9/2</sub>	5.950+01	1.520+03	1.107+01	5.889+01	1.317+01	5.944+01	2.334+00	0.8
12g <sub>9/2</sub>	5.000+01	1.510+03	6.778+00	5.795+01	1.326+01	9.877+01	3.280+00	1.0
6h <sub>9/2</sub>	2.000+02	2.049+03	6.665+00	1.275+04	1.350+01	6.400+01	4.546+00	0.1
7h <sub>9/2</sub>	1.469+02	1.607+03	4.481+00	2.708+03	1.563+01	7.121+01	3.527+00	0.0
8h <sub>9/2</sub>	1.125+02	1.573+03	4.448+00	8.798+02	1.626+01	7.115+01	3.613+00	0.2
9h <sub>9/2</sub>	8.889+01	1.242+03	4.821+00	4.459+02	1.628+01	7.129+01	3.703+00	0.5
10h <sub>9/2</sub>	7.200+01	1.225+03	4.291+00	1.915+02	1.701+01	7.189+01	6.057+00	0.2
11h <sub>9/2</sub>	5.950+01	1.213+03	4.705+00	1.449+02	1.673+01	7.230+01	5.058+00	0.4
12h <sub>9/2</sub>	5.000+01	1.203+03	5.182+00	1.156+02	1.642+01	7.261+01	4.197+00	0.7
6h <sub>11/2</sub>	2.000+02	2.049+03	8.583+00	1.047+04	1.301+01	5.620+01	1.154+00	0.0
7h <sub>11/2</sub>	1.469+02	1.607+03	5.894+00	2.388+03	1.556+01	5.473+01	3.133+00	0.0
8h <sub>11/2</sub>	1.125+02	1.573+03	5.105+00	6.962+02	1.668+01	5.641+01	5.128+00	0.0
9h <sub>11/2</sub>	8.888+01	1.242+03	5.207+00	3.318+02	1.696+01	5.644+01	5.219+00	0.1
10h <sub>11/2</sub>	7.199+01	1.225+03	5.662+00	2.107+02	1.686+01	5.589+01	4.617+00	0.3
11h <sub>11/2</sub>	5.950+01	1.213+03	6.774+00	1.548+02	1.655+01	5.175+01	3.615+00	0.5
12h <sub>11/2</sub>	5.000+01	1.203+03	7.577+00	1.196+02	1.614+01	5.254+01	2.904+00	0.8
7i <sub>11/2</sub>	1.469+02	1.300+03	4.652+00	1.850+04	1.617+01	6.137+01	6.641+00	0.2
8i <sub>11/2</sub>	1.125+02	1.023+03	3.771+00	3.684+03	1.835+01	5.901+01	5.951+00	0.1
9i <sub>11/2</sub>	8.888+01	9.996+02	3.691+00	1.338+03	1.898+01	6.032+01	5.014+00	0.1
10i <sub>11/2</sub>	7.199+01	9.828+02	3.798+00	6.498+02	1.925+01	6.037+01	5.013+00	0.3
11i <sub>11/2</sub>	5.950+01	7.788+02	3.910+00	3.729+02	1.940+01	6.038+01	5.150+00	0.3

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
12 <i>i</i> <sub>11/2</sub>	5.000+01	7.693+02	4.042+00	2.482+02	1.942+01	6.050+01	4.999+00	0.3
7 <i>i</i> <sub>13/2</sub>	1.469+02	1.300+03	6.123+00	1.935+04	1.522+01	5.714+01	4.957–01	0.1
8 <i>i</i> <sub>13/2</sub>	1.125+02	1.023+03	4.274+00	4.384+03	1.791+01	5.641+01	3.690+00	0.0
9 <i>i</i> <sub>13/2</sub>	8.887+01	9.996+02	4.239+00	1.308+03	1.907+01	5.143+01	4.874+00	0.0
10 <i>i</i> <sub>13/2</sub>	7.199+01	9.828+02	4.262+00	6.142+02	1.949+01	5.126+01	5.124+00	0.1
11 <i>i</i> <sub>13/2</sub>	5.950+01	7.788+02	4.339+00	3.528+02	1.969+01	5.122+01	5.193+00	0.1
12 <i>i</i> <sub>13/2</sub>	4.999+01	7.693+02	4.878+00	2.814+02	1.925+01	5.158+01	4.081+00	0.4
Cr <sup>23+</sup>								
1 <i>s</i> <sub>1/2</sub>	7.898+03	5.822+04	1.677+00	7.365+04	4.199+00	2.014+03	1.352+00	0.1
2 <i>s</i> <sub>1/2</sub>	1.978+03	5.231+04	1.414+00	4.244+02	5.181+00	2.014+03	1.205+00	0.2
3 <i>s</i> <sub>1/2</sub>	8.775+02	5.120+04	3.400+00	6.203+02	3.994+00	2.014+03	7.381–01	0.3
4 <i>s</i> <sub>1/2</sub>	4.929+02	5.082+04	4.568+00	3.101+02	3.693+00	2.017+03	2.115+01	0.5
5 <i>s</i> <sub>1/2</sub>	3.151+02	4.006+04	6.566+00	1.460+02	3.413+00	2.013+03	1.092+01	0.8
6 <i>s</i> <sub>1/2</sub>	2.187+02	3.161+04	9.244+00	6.434+01	3.208+00	2.007+03	6.213+00	1.1
7 <i>s</i> <sub>1/2</sub>	1.606+02	2.495+04	1.308+01	2.707+01	3.040+00	2.005+03	3.892+00	1.3
8 <i>s</i> <sub>1/2</sub>	1.229+02	1.970+04	1.589+01	1.444+01	2.940+00	2.006+03	2.982+00	1.4
9 <i>s</i> <sub>1/2</sub>	9.706+01	1.556+04	7.815–02	4.076+05	2.963+00	4.921+05	1.938+02	1.3
10 <i>s</i> <sub>1/2</sub>	7.860+01	1.554+04	7.935–02	3.103+05	2.947+00	4.921+05	1.939+02	1.2
11 <i>s</i> <sub>1/2</sub>	6.494+01	1.228+04	1.123–01	1.485+05	2.873+00	4.920+05	9.627+01	1.3
12 <i>s</i> <sub>1/2</sub>	5.456+01	9.701+03	1.507–01	7.295+04	2.825+00	4.919+05	5.719+01	1.2
2 <i>p</i> <sub>1/2</sub>	1.978+03	5.231+04	4.871+02	5.367+00	2.578+00	1.044+02	1.041+00	0.3
3 <i>p</i> <sub>1/2</sub>	8.775+02	4.062+04	2.936+01	8.749+01	6.163+00	1.007+02	5.515–02	1.0
4 <i>p</i> <sub>1/2</sub>	4.929+02	2.529+04	3.314+01	2.721+01	6.112+00	1.001+02	2.861+00	0.2
5 <i>p</i> <sub>1/2</sub>	3.151+02	1.990+04	4.126+01	1.141+01	5.810+00	1.009+02	2.470+00	0.3
6 <i>p</i> <sub>1/2</sub>	2.187+02	1.568+04	2.940+00	2.470+02	6.038+00	1.323+03	1.945+01	0.4
7 <i>p</i> <sub>1/2</sub>	1.606+02	1.237+04	3.556+00	1.680+02	5.810+00	1.327+03	1.301+01	0.7
8 <i>p</i> <sub>1/2</sub>	1.229+02	1.234+04	4.162+00	1.139+02	5.638+00	1.330+03	9.272+00	1.0
9 <i>p</i> <sub>1/2</sub>	9.706+01	9.743+03	5.088+00	7.331+01	5.457+00	1.326+03	6.353+00	1.3
10 <i>p</i> <sub>1/2</sub>	7.860+01	7.697+03	6.378+00	4.471+01	5.281+00	1.324+03	4.391+00	1.4
11 <i>p</i> <sub>1/2</sub>	6.494+01	7.683+03	7.593+00	2.852+01	5.152+00	1.323+03	3.357+00	1.6
12 <i>p</i> <sub>1/2</sub>	5.456+01	6.071+03	8.646+00	1.944+01	5.052+00	1.323+03	2.731+00	1.8
2 <i>p</i> <sub>3/2</sub>	1.963+03	5.229+04	4.501+02	6.872+00	2.541+00	1.040+02	9.308–01	0.4
3 <i>p</i> <sub>3/2</sub>	8.730+02	4.062+04	2.418+01	1.038+02	6.382+00	1.013+02	1.087–01	0.7
4 <i>p</i> <sub>3/2</sub>	4.910+02	2.528+04	2.728+01	3.227+01	6.327+00	1.013+02	3.760+00	0.1
5 <i>p</i> <sub>3/2</sub>	3.142+02	1.989+04	3.546+01	1.369+01	5.955+00	1.010+02	2.863+00	0.4
6 <i>p</i> <sub>3/2</sub>	2.181+02	1.568+04	1.159+01	3.781+01	5.964+00	3.297+02	5.842+00	0.6
7 <i>p</i> <sub>3/2</sub>	1.602+02	1.237+04	1.505+01	2.141+01	5.648+00	3.308+02	3.785+00	0.9
8 <i>p</i> <sub>3/2</sub>	1.226+02	1.234+04	1.874+01	1.235+01	5.407+00	3.290+02	2.704+00	1.3
9 <i>p</i> <sub>3/2</sub>	9.689+01	9.743+03	3.162+00	1.594+02	5.504+00	1.946+03	9.739+00	1.3
10 <i>p</i> <sub>3/2</sub>	7.847+01	7.697+03	3.906+00	1.020+02	5.340+00	1.937+03	6.620+00	1.4
11 <i>p</i> <sub>3/2</sub>	6.485+01	7.683+03	4.479+00	6.970+01	5.234+00	1.937+03	5.117+00	1.7
12 <i>p</i> <sub>3/2</sub>	5.449+01	6.071+03	5.867+00	3.946+01	5.071+00	1.934+03	3.529+00	1.6
3 <i>d</i> <sub>3/2</sub>	8.730+02	1.634+04	8.036+00	2.181+04	6.655+00	2.762+02	1.192–01	0.5
4 <i>d</i> <sub>3/2</sub>	4.910+02	1.270+04	4.110+00	8.190+02	8.932+00	2.753+02	1.486–01	0.4
5 <i>d</i> <sub>3/2</sub>	3.142+02	9.960+03	4.728+00	2.749+02	8.900+00	2.758+02	4.619–01	0.3
6 <i>d</i> <sub>3/2</sub>	2.181+02	7.836+03	4.574+00	1.067+02	9.132+00	2.763+02	1.296+01	0.2
7 <i>d</i> <sub>3/2</sub>	1.602+02	7.778+03	5.253+00	7.355+01	8.863+00	2.791+02	9.933+00	0.4
8 <i>d</i> <sub>3/2</sub>	1.226+02	6.139+03	6.253+00	5.404+01	8.541+00	2.799+02	7.038+00	0.7
9 <i>d</i> <sub>3/2</sub>	9.689+01	6.114+03	7.300+00	3.936+01	8.275+00	2.800+02	5.186+00	1.1
10 <i>d</i> <sub>3/2</sub>	7.847+01	4.830+03	8.922+00	2.785+01	7.959+00	2.814+02	3.637+00	1.3
11 <i>d</i> <sub>3/2</sub>	6.485+01	4.817+03	1.562–01	5.649+03	8.113+00	1.540+04	1.481+02	1.4
12 <i>d</i> <sub>3/2</sub>	5.449+01	3.807+03	1.799–01	5.548+03	7.939+00	1.536+04	1.064+02	1.5
3 <i>d</i> <sub>5/2</sub>	8.715+02	1.634+04	7.351+00	2.378+04	6.766+00	2.764+02	3.396–01	0.4
4 <i>d</i> <sub>5/2</sub>	4.904+02	1.270+04	3.893+00	8.000+02	9.017+00	2.763+02	8.313–01	0.3
5 <i>d</i> <sub>5/2</sub>	3.138+02	9.960+03	4.515+00	2.711+02	8.970+00	2.761+02	2.658+00	0.3
6 <i>d</i> <sub>5/2</sub>	2.179+02	7.836+03	4.423+00	1.037+02	9.197+00	2.744+02	1.374+01	0.2
7 <i>d</i> <sub>5/2</sub>	1.601+02	7.778+03	5.026+00	7.321+01	8.922+00	2.803+02	1.060+01	0.5
8 <i>d</i> <sub>5/2</sub>	1.226+02	6.139+03	6.000+00	5.526+01	8.578+00	2.828+02	7.387+00	0.7
9 <i>d</i> <sub>5/2</sub>	9.684+01	6.114+03	6.989+00	4.073+01	8.308+00	2.835+02	5.441+00	1.1
10 <i>d</i> <sub>5/2</sub>	7.843+01	4.830+03	8.509+00	2.930+01	7.988+00	2.866+02	3.803+00	1.3
11 <i>d</i> <sub>5/2</sub>	6.482+01	4.817+03	1.547–01	5.785+03	8.111+00	1.540+04	1.480+02	1.5
12 <i>d</i> <sub>5/2</sub>	5.446+01	3.807+03	1.786–01	5.662+03	7.936+00	1.536+04	1.063+02	1.5
4 <i>f</i> <sub>5/2</sub>	4.904+02	6.507+03	1.528+01	3.264+03	9.199+00	6.588+01	5.876+00	0.3
5 <i>f</i> <sub>5/2</sub>	3.138+02	6.331+03	9.538+00	4.734+02	1.149+01	6.616+01	6.307+00	0.4
6 <i>f</i> <sub>5/2</sub>	2.179+02	4.970+03	8.363+00	1.281+02	1.230+01	6.778+01	7.973+00	0.4
7 <i>f</i> <sub>5/2</sub>	1.601+02	3.913+03	9.754+00	8.796+01	1.166+01	7.509+01	4.994+00	0.2
8 <i>f</i> <sub>5/2</sub>	1.226+02	3.876+03	1.105+01	5.518+01	1.140+01	7.521+01	4.069+00	0.4
9 <i>f</i> <sub>5/2</sub>	9.684+01	3.061+03	1.360+01	3.733+01	1.091+01	7.483+01	2.891+00	0.7
10 <i>f</i> <sub>5/2</sub>	7.843+01	3.042+03	3.224+00	7.649+01	1.116+01	3.059+02	9.635+00	0.8
11 <i>f</i> <sub>5/2</sub>	6.482+01	3.029+03	3.618+00	6.482+01	1.090+01	3.071+02	7.491+00	1.1
12 <i>f</i> <sub>5/2</sub>	5.446+01	2.395+03	4.226+00	5.527+01	1.057+01	3.105+02	5.468+00	1.3
4 <i>f</i> <sub>7/2</sub>	4.900+02	6.507+03	1.498+01	3.372+03	9.230+00	6.586+01	5.897+00	0.3
5 <i>f</i> <sub>7/2</sub>	3.137+02	6.330+03	8.600+00	4.289+02	1.177+01	6.748+01	8.193+00	0.5
6 <i>f</i> <sub>7/2</sub>	2.178+02	4.970+03	9.884+00	1.699+02	1.169+01	6.789+01	4.927+00	0.0
7 <i>f</i> <sub>7/2</sub>	1.600+02	3.913+03	1.068+01	8.447+01	1.165+01	6.812+01	4.649+00	0.2

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$8f_{7/2}$	1.225+02	3.875+03	1.226+01	5.280+01	1.136+01	6.813+01	3.705+00	0.5
$9f_{7/2}$	9.681+01	3.061+03	1.513+01	3.502+01	1.085+01	6.808+01	2.634+00	0.7
$10f_{7/2}$	7.841+01	3.042+03	8.362+00	4.040+01	1.089+01	1.275+02	3.918+00	0.9
$11f_{7/2}$	6.480+01	3.029+03	9.729+00	3.038+01	1.056+01	1.274+02	2.987+00	1.3
$12f_{7/2}$	5.445+01	2.395+03	5.798+00	4.160+01	1.048+01	2.327+02	4.093+00	1.3
$5g_{7/2}$	3.137+02	3.278+03	1.307+01	5.291+03	1.084+01	5.831+01	1.442+00	0.1
$6g_{7/2}$	2.178+02	3.182+03	9.035+00	1.210+03	1.301+01	5.790+01	4.515+01	0.1
$7g_{7/2}$	1.600+02	2.501+03	8.394+00	4.177+02	1.365+01	6.018+01	2.176+00	0.3
$8g_{7/2}$	1.225+02	2.463+03	7.798+00	1.630+02	1.433+01	5.930+01	4.885+00	0.2
$9g_{7/2}$	9.681+01	2.438+03	8.044+00	9.656+01	1.438+01	5.941+01	4.739+00	0.3
$10g_{7/2}$	7.841+01	1.927+03	9.461+00	7.522+01	1.375+01	6.220+01	3.360+00	0.6
$11g_{7/2}$	6.480+01	1.914+03	1.093+01	5.559+01	1.332+01	6.253+01	2.601+00	0.9
$12g_{7/2}$	5.445+01	1.903+03	1.260+01	4.114+01	1.291+01	6.284+01	2.039+00	1.2
$5g_{9/2}$	3.136+02	3.278+03	1.323+01	5.249+03	1.080+01	5.833+01	1.418+00	0.0
$6g_{9/2}$	2.178+02	3.182+03	8.491+00	1.142+03	1.324+01	5.789+01	2.794+00	0.1
$7g_{9/2}$	1.600+02	2.501+03	8.651+00	3.958+02	1.369+01	5.797+01	2.892+00	0.3
$8g_{9/2}$	1.225+02	2.463+03	8.115+00	1.632+02	1.432+01	5.696+01	4.705+00	0.2
$9g_{9/2}$	9.679+01	2.438+03	8.895+00	1.033+02	1.413+01	5.713+01	4.043+00	0.4
$10g_{9/2}$	7.840+01	1.927+03	1.036+01	7.389+01	1.369+01	5.749+01	3.092+00	0.6
$11g_{9/2}$	6.479+01	1.914+03	1.200+01	5.372+01	1.326+01	5.770+01	2.393+00	0.9
$12g_{9/2}$	5.444+01	1.903+03	1.431+00	9.587+01	1.382+01	4.361+02	1.647+01	0.9
$6h_{9/2}$	2.178+02	2.067+03	9.375+00	9.754+03	1.294+01	5.726+01	4.232+01	0.1
$7h_{9/2}$	1.600+02	2.009+03	5.833+00	2.352+03	1.552+01	6.101+01	2.950+00	0.0
$8h_{9/2}$	1.225+02	1.583+03	5.789+00	8.089+02	1.614+01	6.098+01	3.047+00	0.2
$9h_{9/2}$	9.679+01	1.557+03	5.472+00	2.984+02	1.699+01	5.829+01	5.449+00	0.1
$10h_{9/2}$	7.840+01	1.539+03	5.529+00	1.693+02	1.717+01	5.832+01	5.553+00	0.2
$11h_{9/2}$	6.479+01	1.218+03	6.259+00	1.408+02	1.657+01	6.129+01	4.121+00	0.4
$12h_{9/2}$	5.444+01	1.208+03	7.141+00	1.098+02	1.620+01	6.028+01	3.292+00	0.7
$6h_{11/2}$	2.177+02	2.067+03	8.926+00	1.032+04	1.303+01	5.866+01	1.250+00	0.0
$7h_{11/2}$	1.600+02	2.009+03	4.800+00	1.804+03	1.618+01	6.461+01	7.094+00	0.2
$8h_{11/2}$	1.225+02	1.583+03	4.531+00	5.315+02	1.704+01	6.457+01	7.168+00	0.1
$9h_{11/2}$	9.678+01	1.557+03	4.609+00	2.483+02	1.732+01	6.459+01	7.060+00	0.1
$10h_{11/2}$	7.839+01	1.539+03	4.674+00	1.415+02	1.748+01	6.461+01	6.982+00	0.3
$11h_{11/2}$	6.479+01	1.218+03	6.072+00	1.389+02	1.662+01	6.247+01	4.286+00	0.4
$12h_{11/2}$	5.444+01	1.208+03	6.810+00	1.093+02	1.625+01	6.242+01	3.466+00	0.7
$7i_{11/2}$	1.600+02	1.313+03	6.836+00	1.714+04	1.518+01	5.633+01	4.631+01	0.1
$8i_{11/2}$	1.225+02	1.276+03	6.317+00	2.829+03	1.856+01	3.679+01	5.230+00	0.2
$9i_{11/2}$	9.678+01	1.008+03	7.571+00	1.488+03	1.832+01	3.591+01	2.480+00	0.2
$10i_{11/2}$	7.839+01	9.892+02	8.003+00	7.949+02	1.845+01	3.601+01	2.394+00	0.5
$11i_{11/2}$	6.479+01	9.756+02	7.008+00	4.253+02	1.928+01	3.693+01	3.427+00	0.2
$12i_{11/2}$	5.444+01	9.652+02	7.666+00	3.032+02	1.903+01	3.685+01	2.933+00	0.4
$7i_{13/2}$	1.600+02	1.313+03	6.836+00	1.714+04	1.518+01	5.633+01	4.631+01	0.1
$8i_{13/2}$	1.225+02	1.276+03	6.317+00	2.829+03	1.856+01	3.679+01	5.230+00	0.2
$9i_{13/2}$	9.678+01	1.008+03	7.571+00	1.488+03	1.832+01	3.591+01	2.480+00	0.2
$10i_{13/2}$	7.839+01	9.892+02	4.748+00	7.219+02	1.884+01	5.687+01	3.615+00	0.4
$11i_{13/2}$	6.478+01	9.756+02	4.255+00	3.164+02	1.962+01	5.785+01	5.506+00	0.2
$12i_{13/2}$	5.444+01	9.652+02	4.511+00	2.272+02	1.947+01	5.829+01	4.957+00	0.4
Kr <sup>7+</sup>								
$4s_{1/2}$	1.248+02	5.045+04	5.180+00	9.366+00	4.437+00	2.507+03	3.484+03	1.4
$5s_{1/2}$	6.464+01	3.146+04	5.700+03	1.924+05	4.012+00	4.425+06	1.381+03	3.3
$6s_{1/2}$	3.975+01	1.962+04	3.037+04	5.083+07	3.720+00	1.779+08	6.859+03	4.4
$7s_{1/2}$	2.694+01	1.549+04	5.016+04	3.042+07	3.581+00	1.779+08	6.860+03	4.7
$8s_{1/2}$	1.947+01	1.223+04	6.352+04	1.950+07	3.513+00	1.779+08	6.860+03	4.7
$9s_{1/2}$	1.473+01	9.661+03	6.687+04	1.516+07	3.476+00	1.779+08	6.860+03	5.3
$10s_{1/2}$	1.153+01	7.630+03	4.193+01	1.986+02	3.286+00	4.423+06	4.226+00	4.8
$11s_{1/2}$	9.271+00	6.026+03	4.311+01	1.448+02	3.270+00	4.423+06	6.273+00	4.9
$12s_{1/2}$	7.617+00	6.024+03	4.050+01	1.277+02	3.256+00	4.423+06	7.157+00	5.4
$4p_{1/2}$	1.071+02	2.490+04	2.311+01	8.352+01	8.434+00	1.006+02	1.364+00	1.4
$5p_{1/2}$	5.767+01	1.964+04	8.112+00	6.632+01	7.993+00	3.676+02	4.807+00	1.3
$6p_{1/2}$	3.628+01	1.225+04	2.820+01	3.488+00	7.735+00	1.264+04	1.275+02	2.1
$7p_{1/2}$	2.497+01	9.671+03	3.844+01	4.680+00	7.327+00	1.251+04	8.086+01	3.2
$8p_{1/2}$	1.824+01	7.636+03	5.337+01	5.116+00	6.976+00	1.251+04	4.881+01	4.3
$9p_{1/2}$	1.391+01	7.632+03	6.863+01	4.645+00	6.732+00	1.251+04	3.243+01	5.6
$10p_{1/2}$	1.096+01	6.028+03	9.894+01	3.645+00	6.471+00	1.251+04	1.897+01	6.3
$11p_{1/2}$	8.860+00	4.761+03	1.358+00	2.551+00	6.282+00	1.252+04	1.203+01	6.8
$12p_{1/2}$	7.310+00	4.759+03	1.450+00	2.089+00	6.205+00	1.252+04	1.026+01	7.4
$4p_{3/2}$	1.059+02	2.490+04	9.692+00	8.996+01	8.674+00	2.025+02	1.077+00	1.1
$5p_{3/2}$	5.720+01	1.552+04	2.161+00	1.285+00	8.042+00	1.256+03	1.542+01	1.4
$6p_{3/2}$	3.605+01	1.225+04	3.060+00	1.316+00	7.477+00	1.256+03	1.028+01	2.8
$7p_{3/2}$	2.484+01	9.671+03	4.243+00	1.086+00	7.045+00	1.260+03	6.377+00	4.0
$8p_{3/2}$	1.816+01	7.636+03	4.854+02	9.014+01	6.880+00	1.375+05	4.662+02	4.6
$9p_{3/2}$	1.386+01	7.632+03	6.205+02	1.004+02	6.657+00	1.373+05	3.132+02	5.9
$10p_{3/2}$	1.092+01	6.028+03	8.963+02	9.708+01	6.416+00	1.370+05	1.829+02	6.6

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
11p <sub>3/2</sub>	8.832+00	4.761+03	1.389–01	7.406+01	6.202+00	1.369+05	1.004+02	7.2
12p <sub>3/2</sub>	7.289+00	4.759+03	1.449+00	2.569+00	6.140+00	1.252+04	9.179+00	7.4
4d <sub>3/2</sub>	7.881+01	7.697+03	4.218+01	8.741+00	9.636+00	2.893+01	1.916–01	0.7
5d <sub>3/2</sub>	4.603+01	7.664+03	2.734+01	3.945+00	9.939+00	4.293+01	4.705–01	0.7
6d <sub>3/2</sub>	3.032+01	6.047+03	1.972+01	2.139+00	1.008+01	5.837+01	6.992–01	0.7
7d <sub>3/2</sub>	2.150+01	6.038+03	1.524+01	1.298+00	1.017+01	7.482+01	9.257–01	0.8
8d <sub>3/2</sub>	1.604+01	4.768+03	1.237+01	8.502–01	1.021+01	9.197+01	1.152+00	0.8
9d <sub>3/2</sub>	1.243+01	4.764+03	1.039+01	5.881–01	1.027+01	1.078+02	1.385+00	1.0
10d <sub>3/2</sub>	9.918+00	3.763+03	9.038+00	4.266–01	1.026+01	1.259+02	1.590+00	0.9
11d <sub>3/2</sub>	8.096+00	3.761+03	8.005+00	3.183–01	1.028+01	1.422+02	1.801+00	1.2
12d <sub>3/2</sub>	6.734+00	2.971+03	7.200+00	2.440–01	1.030+01	1.578+02	2.008+00	1.0
4d <sub>5/2</sub>	7.864+01	7.697+03	4.046+01	9.161+00	9.727+00	2.860+01	1.314–01	0.6
5d <sub>5/2</sub>	4.595+01	7.664+03	2.634+01	4.079+00	9.987+00	4.297+01	4.785–01	0.7
6d <sub>5/2</sub>	3.028+01	6.047+03	1.901+01	2.208+00	1.011+01	5.905+01	7.248–01	0.8
7d <sub>5/2</sub>	2.148+01	6.038+03	1.458+01	1.340+00	1.019+01	7.637+01	9.698–01	0.9
8d <sub>5/2</sub>	1.603+01	4.768+03	1.177+01	8.810–01	1.023+01	9.459+01	1.213+00	0.9
9d <sub>5/2</sub>	1.242+01	4.764+03	9.864+00	6.125–01	1.025+01	1.132+02	1.456+00	0.8
10d <sub>5/2</sub>	9.911+00	3.763+03	8.497+00	4.446–01	1.027+01	1.314+02	1.696+00	0.9
11d <sub>5/2</sub>	8.091+00	3.761+03	7.465+00	3.325–01	1.029+01	1.499+02	1.936+00	1.1
12d <sub>5/2</sub>	6.730+00	2.971+03	6.684+00	2.575–01	1.028+01	1.695+02	2.155+00	0.9
4f <sub>5/2</sub>	5.564+01	1.516+03	2.756+00	1.087+00	1.395+01	1.231+02	6.279+01	0.8
5f <sub>5/2</sub>	3.571+01	1.496+03	9.688–01	4.763–02	1.568+01	2.444+02	1.768+02	0.9
6f <sub>5/2</sub>	2.477+01	1.178+03	6.499+00	1.490+02	7.147+00	1.870+03	5.336–01	2.1
7f <sub>5/2</sub>	1.817+01	9.289+02	7.533+00	5.965+01	7.235+00	1.511+03	7.857–01	1.4
8f <sub>5/2</sub>	1.388+01	9.246+02	6.382+00	5.336+01	7.420+00	1.511+03	7.768–01	1.1
9f <sub>5/2</sub>	1.095+01	9.217+02	6.035+00	4.046+01	7.499+00	1.511+03	7.888–01	1.2
10f <sub>5/2</sub>	8.855+00	7.282+02	5.291+00	3.682+01	7.632+00	1.511+03	8.114–01	1.3
11f <sub>5/2</sub>	7.309+00	7.266+02	4.678+00	3.419+01	7.744+00	1.511+03	8.279–01	1.6
12f <sub>5/2</sub>	6.135+00	7.255+02	1.588+01	2.576–03	1.379+01	8.254+01	2.591+01	1.7
4f <sub>7/2</sub>	5.564+01	1.516+03	3.947+00	1.288+00	1.402+01	8.324+01	4.366+01	0.8
5f <sub>7/2</sub>	3.571+01	1.496+03	4.067+00	3.368–01	1.583+01	5.529+01	4.160+01	0.9
6f <sub>7/2</sub>	2.477+01	1.178+03	6.589+00	1.450+02	7.135+00	1.870+03	5.432–01	2.1
7f <sub>7/2</sub>	1.817+01	9.289+02	7.644+00	5.804+01	7.221+00	1.511+03	7.849–01	1.4
8f <sub>7/2</sub>	1.388+01	9.247+02	6.544+00	5.088+01	7.399+00	1.511+03	7.791–01	1.1
9f <sub>7/2</sub>	1.095+01	9.217+02	6.080+00	4.000+01	7.491+00	1.511+03	7.874–01	1.2
10f <sub>7/2</sub>	8.855+00	7.282+02	5.328+00	3.654+01	7.623+00	1.511+03	8.074–01	1.3
11f <sub>7/2</sub>	7.309+00	7.266+02	4.638+00	3.478+01	7.751+00	1.511+03	8.293–01	1.7
12f <sub>7/2</sub>	6.135+00	7.255+02	2.307+01	2.267–03	1.374+01	6.090+01	1.988+01	2.4
5g <sub>7/2</sub>	3.485+01	4.835+02	1.819+01	1.019–01	1.343+01	2.986+01	1.881+01	0.3
6g <sub>7/2</sub>	2.421+01	4.729+02	7.349+00	2.961–01	1.609+01	2.959+01	3.628+01	0.2
7g <sub>7/2</sub>	1.779+01	3.721+02	7.710+00	1.571–01	1.656+01	2.776+01	3.579+01	0.3
8g <sub>7/2</sub>	1.362+01	3.680+02	8.231+00	8.352–02	1.663+01	2.791+01	3.536+01	0.2
9g <sub>7/2</sub>	1.076+01	2.906+02	8.904+00	4.678–02	1.656+01	2.823+01	3.462+01	0.1
10g <sub>7/2</sub>	8.716+00	2.886+02	9.694+00	2.682–02	1.645+01	2.849+01	3.412+01	0.2
11g <sub>7/2</sub>	7.203+00	2.871+02	1.016+01	1.720–02	1.641+01	2.848+01	3.433+01	0.6
12g <sub>7/2</sub>	6.052+00	2.859+02	1.013+01	1.082–02	1.631+01	3.070+01	3.591+01	0.5
5g <sub>9/2</sub>	3.485+01	4.835+02	1.754+01	1.196–01	1.353+01	2.900+01	1.897+01	0.2
6g <sub>9/2</sub>	2.421+01	4.729+02	2.323+00	1.661–01	1.616+01	8.999+01	1.126+02	0.2
7g <sub>9/2</sub>	1.779+01	3.721+02	2.558+00	6.098–02	1.639+01	8.981+01	1.126+02	0.3
8g <sub>9/2</sub>	1.362+01	3.680+02	2.577+00	3.292–02	1.660+01	8.974+01	1.127+02	0.5
9g <sub>9/2</sub>	1.076+01	2.906+02	2.787+00	1.827–02	1.657+01	8.961+01	1.128+02	0.3
10g <sub>9/2</sub>	8.715+00	2.886+02	2.905+00	1.121–02	1.646+01	9.400+01	1.144+02	0.3
11g <sub>9/2</sub>	7.203+00	2.871+02	3.057+00	7.374–03	1.642+01	9.384+01	1.146+02	0.5
12g <sub>9/2</sub>	6.052+00	2.859+02	3.334+00	4.726–03	1.630+01	9.369+01	1.145+02	0.8
6h <sub>9/2</sub>	2.419+01	2.452+02	4.485+01	9.483–02	1.618+01	4.598+00	7.999+00	0.1
7h <sub>9/2</sub>	1.777+01	2.388+02	1.956+01	4.844–01	1.817+01	6.938+00	1.717+01	0.2
8h <sub>9/2</sub>	1.361+01	2.346+02	2.028+01	5.172–01	1.887+01	6.228+00	1.665+01	0.2
9h <sub>9/2</sub>	1.075+01	1.853+02	2.182+01	3.497–01	1.909+01	5.926+00	1.657+01	0.2
10h <sub>9/2</sub>	8.708+00	1.833+02	2.277+01	2.345–01	1.916+01	5.877+00	1.644+01	0.1
11h <sub>9/2</sub>	7.197+00	1.818+02	2.505+01	1.317–01	1.910+01	5.678+00	1.660+01	0.2
12h <sub>9/2</sub>	6.048+00	1.806+02	2.957+01	7.136–02	1.903+01	5.103+00	1.663+01	0.4
6h <sub>11/2</sub>	2.419+01	2.452+02	1.352+02	1.555–02	1.553+01	2.194+00	2.437+00	0.3
7h <sub>11/2</sub>	1.777+01	2.388+02	1.137+02	4.056–01	1.756+01	1.596+00	2.552+00	0.6
8h <sub>11/2</sub>	1.361+01	2.346+02	6.766+01	1.127+00	1.865+01	2.064+00	4.653+00	0.4
9h <sub>11/2</sub>	1.075+01	1.853+02	5.500+01	9.913–01	1.902+01	2.444+00	5.807+00	0.2
10h <sub>11/2</sub>	8.708+00	1.833+02	5.524+01	7.254–01	1.912+01	2.490+00	5.872+00	0.2
11h <sub>11/2</sub>	7.197+00	1.818+02	6.680+01	3.670–01	1.902+01	2.231+00	5.616+00	0.2
12h <sub>11/2</sub>	6.048+00	1.806+02	7.748+01	2.378–01	1.896+01	2.025+00	5.175+00	0.3
7i <sub>11/2</sub>	1.777+01	1.556+02	8.047+00	1.709–01	1.827+01	1.619+01	4.635+01	0.1
8i <sub>11/2</sub>	1.361+01	1.515+02	5.732+00	7.288–01	2.057+01	1.471+01	4.571+01	0.8
9i <sub>11/2</sub>	1.075+01	1.486+02	7.305+00	4.268–01	2.110+01	1.167+01	4.419+01	0.2
10i <sub>11/2</sub>	8.708+00	1.466+02	6.840+00	3.813–01	2.158+01	1.196+01	4.439+01	0.4
11i <sub>11/2</sub>	7.197+00	1.161+02	7.066+00	2.539–01	2.168+01	1.196+01	4.473+01	0.3
12i <sub>11/2</sub>	6.047+00	1.149+02	7.234+00	1.741–01	2.172+01	1.205+01	4.503+01	0.4
7i <sub>13/2</sub>	1.777+01	1.556+02	7.764+00	1.682–01	1.825+01	1.685+01	4.853+01	0.1

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$8i_{13/2}$	1.361+01	1.515+02	7.050+00	4.108–01	2.023+01	1.329+01	4.628+01	0.2
$9i_{13/2}$	1.075+01	1.486+02	6.255+00	4.628–01	2.121+01	1.322+01	4.770+01	0.4
$10i_{13/2}$	8.708+00	1.466+02	5.848+00	3.722–01	2.164+01	1.372+01	4.883+01	0.7
$11i_{13/2}$	7.197+00	1.161+02	6.087+00	2.486–01	2.173+01	1.367+01	4.852+01	0.4
$12i_{13/2}$	6.047+00	1.149+02	6.243+00	1.686–01	2.176+01	1.379+01	4.883+01	0.6
Kr <sup>17+</sup>								
$4s_{1/2}$	3.865+02	5.071+04	6.966+00	3.699+01	4.056+00	2.512+03	9.438+00	0.6
$5s_{1/2}$	2.286+02	5.056+04	1.150+01	1.542+01	3.687+00	2.538+03	5.987+00	1.6
$6s_{1/2}$	1.513+02	3.990+04	1.880+01	5.636+00	3.416+00	2.532+03	3.322+00	2.3
$7s_{1/2}$	1.076+02	3.150+04	7.267+00	2.205+01	3.301+00	1.001+04	5.003+00	2.7
$8s_{1/2}$	8.046+01	2.487+04	3.259–03	2.636+07	3.266+00	2.724+07	5.917+03	2.6
$9s_{1/2}$	6.243+01	1.964+04	7.636–03	5.545+06	3.187+00	1.650+07	2.001+03	2.5
$10s_{1/2}$	4.985+01	1.551+04	3.678–01	3.573+03	3.062+00	9.080+05	2.458+01	2.9
$11s_{1/2}$	4.073+01	1.225+04	7.842–01	7.034+02	2.999+00	9.080+05	1.095+01	2.7
$12s_{1/2}$	3.390+01	1.225+04	9.664–01	3.804+02	2.974+00	9.080+05	9.030+00	2.9
$4p_{1/2}$	3.618+02	3.175+04	5.959+01	4.174+00	6.498+00	1.022+02	1.465+00	0.5
$5p_{1/2}$	2.170+02	2.501+04	4.172+00	3.285+01	6.673+00	1.418+03	1.091+01	0.4
$6p_{1/2}$	1.450+02	1.973+04	5.442+00	2.306+01	6.322+00	1.424+03	8.304+00	1.1
$7p_{1/2}$	1.038+02	1.557+04	7.194+00	1.479+01	6.025+00	1.424+03	5.469+00	1.8
$8p_{1/2}$	7.795+01	1.229+04	1.394–02	2.098+05	5.856+00	9.540+05	1.516+03	2.6
$9p_{1/2}$	6.070+01	1.227+04	1.444–02	1.742+05	5.807+00	9.540+05	1.516+03	2.5
$10p_{1/2}$	4.861+01	9.695+03	1.851–02	1.592+05	5.655+00	9.539+05	9.422+02	2.7
$11p_{1/2}$	3.981+01	9.686+03	1.824–02	1.326+05	5.640+00	9.539+05	9.422+02	2.7
$12p_{1/2}$	3.320+01	7.651+03	5.530–03	1.336+06	5.517+00	4.054+06	2.516+03	2.8
$4p_{3/2}$	3.585+02	3.175+04	4.936+01	5.203+00	6.648+00	1.020+02	1.779+00	0.3
$5p_{3/2}$	2.154+02	2.501+04	4.118–02	6.313+03	6.720+00	1.273+05	1.086+03	0.5
$6p_{3/2}$	1.441+02	1.972+04	4.679–02	6.705+03	6.520+00	1.273+05	1.086+03	0.9
$7p_{3/2}$	1.032+02	1.557+04	6.825–02	1.110+04	6.117+00	1.265+05	4.797+02	1.8
$8p_{3/2}$	7.761+01	1.229+04	1.328–02	2.996+05	5.808+00	9.540+05	1.516+03	2.9
$9p_{3/2}$	6.048+01	1.227+04	1.232–02	2.855+05	5.768+00	1.053+06	1.732+03	2.7
$10p_{3/2}$	4.845+01	9.694+03	1.221–02	2.312+05	5.750+00	1.053+06	1.732+03	2.2
$11p_{3/2}$	3.969+01	7.658+03	1.163–02	1.957+05	5.747+00	1.053+06	1.732+03	2.7
$12p_{3/2}$	3.310+01	7.651+03	5.277–03	1.885+06	5.475+00	4.054+06	2.516+03	2.9
$3d_{3/2}$	6.413+02	1.611+04	2.858+02	6.705+00	4.179+00	1.388+02	7.382–01	0.9
$4d_{3/2}$	3.205+02	1.253+04	1.369+01	8.235+01	8.999+00	1.368+02	9.969–03	1.0
$5d_{3/2}$	1.979+02	9.844+03	1.643+01	3.246+01	8.775+00	1.363+02	2.287+00	0.4
$6d_{3/2}$	1.346+02	7.753+03	1.991+01	1.660+01	8.457+00	1.369+02	2.194+00	0.7
$7d_{3/2}$	9.746+01	7.716+03	2.012+00	1.065+02	8.688+00	1.286+03	1.265+01	0.8
$8d_{3/2}$	7.384+01	6.091+03	2.320+00	8.109+01	8.474+00	1.287+03	1.006+01	1.2
$9d_{3/2}$	5.787+01	6.075+03	2.631+00	6.155+01	8.299+00	1.283+03	8.016+00	1.6
$10d_{3/2}$	4.658+01	4.798+03	3.076+00	4.609+01	8.108+00	1.279+03	6.096+00	1.9
$11d_{3/2}$	3.830+01	4.790+03	3.557+00	3.423+01	7.942+00	1.279+03	4.760+00	1.9
$12d_{3/2}$	3.205+01	3.785+03	6.762–01	3.094+02	7.947+00	6.973+03	1.899+01	2.0
$3d_{5/2}$	6.393+02	1.610+04	2.959+02	6.157+00	4.097+00	1.388+02	7.234–01	1.1
$4d_{5/2}$	3.199+02	1.253+04	1.309+01	8.412+01	9.071+00	1.352+02	1.183–01	0.9
$5d_{5/2}$	1.976+02	9.844+03	1.555+01	3.326+01	8.860+00	1.351+02	2.542+00	0.3
$6d_{5/2}$	1.344+02	7.753+03	1.916+01	1.720+01	8.508+00	1.353+02	2.286+00	0.8
$7d_{5/2}$	9.735+01	7.716+03	3.498–01	6.685+02	8.765+00	6.977+03	6.994+01	0.9
$8d_{5/2}$	7.377+01	6.090+03	4.022–01	6.157+02	8.550+00	6.991+03	5.397+01	1.2
$9d_{5/2}$	5.783+01	6.075+03	4.506–01	5.330+02	8.391+00	6.964+03	4.315+01	1.6
$10d_{5/2}$	4.655+01	4.798+03	5.191–01	4.658+02	8.215+00	6.968+03	3.212+01	1.7
$11d_{5/2}$	3.828+01	4.790+03	5.659–01	3.899+02	8.105+00	6.966+03	2.651+01	2.2
$12d_{5/2}$	3.203+01	3.785+03	6.775–01	3.195+02	7.932+00	6.973+03	1.871+01	1.8
$4f_{5/2}$	2.871+02	5.039+03	2.336+01	3.591+02	9.415+00	5.246+01	4.150+00	0.3
$5f_{5/2}$	1.830+02	4.935+03	2.839+01	1.047+02	9.525+00	5.003+01	1.762+00	0.6
$6f_{5/2}$	1.265+02	3.879+03	1.856+01	8.377+01	9.869+00	7.625+01	1.715+00	0.7
$7f_{5/2}$	9.256+01	3.057+03	4.031+00	2.404+02	1.041+01	3.138+02	3.334+00	0.5
$8f_{5/2}$	7.063+01	3.035+03	4.224+00	1.422+02	1.039+01	3.133+02	3.906+00	0.6
$9f_{5/2}$	5.566+01	2.397+03	4.634+00	9.419+01	1.026+01	3.134+02	3.515+00	0.5
$10f_{5/2}$	4.499+01	2.386+03	5.004+00	6.598+01	1.015+01	3.135+02	3.169+00	0.7
$11f_{5/2}$	3.712+01	2.378+03	5.479+00	4.774+01	1.001+01	3.134+02	2.748+00	0.9
$12f_{5/2}$	3.114+01	1.880+03	6.299+00	3.416+01	9.794+00	3.133+02	2.235+00	1.1
$4f_{7/2}$	2.870+02	5.039+03	3.568+01	1.905+02	9.219+00	3.580+01	2.916+00	0.3
$5f_{7/2}$	1.830+02	4.935+03	1.120+01	3.291+02	1.003+01	1.071+02	2.978+00	0.5
$6f_{7/2}$	1.264+02	3.879+03	1.206+01	1.349+02	1.011+01	1.073+02	2.074+00	0.7
$7f_{7/2}$	9.253+01	3.057+03	1.351+01	6.771+01	1.000+01	1.074+02	1.862+00	0.6
$8f_{7/2}$	7.061+01	3.035+03	1.504+01	3.890+01	9.850+00	1.075+02	1.674+00	0.8
$9f_{7/2}$	5.565+01	2.397+03	4.662+00	9.412+01	1.026+01	3.103+02	3.462+00	0.5
$10f_{7/2}$	4.498+01	2.386+03	5.024+00	6.580+01	1.015+01	3.101+02	3.162+00	0.7
$11f_{7/2}$	3.711+01	2.378+03	5.492+00	4.778+01	1.001+01	3.104+02	2.738+00	1.0
$12f_{7/2}$	3.114+01	1.880+03	6.350+00	3.397+01	9.787+00	3.104+02	2.221+00	1.0
$5g_{7/2}$	1.769+02	2.518+03	2.188+01	6.311+02	7.837+00	1.739+02	9.264–01	0.8
$6g_{7/2}$	1.230+02	1.972+03	3.842+01	5.628+01	8.427+00	8.010+01	7.664–01	0.3

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$7g_{7/2}$	9.036+01	1.939+03	4.096+01	2.680+01	8.609+00	7.997+01	6.989–01	0.6
$8g_{7/2}$	6.917+01	1.529+03	2.598+01	4.746+01	9.974+00	6.485+01	8.471–01	0.3
$9g_{7/2}$	5.464+01	1.515+03	1.922+01	5.297+01	1.074+01	6.507+01	1.004+00	0.6
$10g_{7/2}$	4.425+01	1.504+03	1.379+01	5.816+01	1.117+01	8.102+01	1.158+00	0.5
$11g_{7/2}$	3.656+01	1.190+03	8.133+00	7.762+01	1.178+01	1.120+02	1.609+00	0.5
$12g_{7/2}$	3.072+01	1.184+03	4.815+00	9.936+01	1.211+01	1.723+02	2.287+00	0.6
$5g_{9/2}$	1.769+02	2.518+03	2.921+01	2.517+02	7.698+00	1.389+02	1.174+00	0.8
$6g_{9/2}$	1.230+02	1.972+03	3.837+01	5.657+01	8.424+00	8.006+01	7.620–01	0.3
$7g_{9/2}$	9.035+01	1.939+03	4.118+01	2.645+01	8.591+00	8.022+01	6.962–01	0.7
$8g_{9/2}$	6.917+01	1.529+03	2.682+01	4.470+01	9.924+00	6.391+01	8.399–01	0.3
$9g_{9/2}$	5.464+01	1.515+03	2.032+01	4.859+01	1.065+01	6.373+01	9.749–01	0.6
$10g_{9/2}$	4.425+01	1.197+03	1.255+01	6.580+01	1.135+01	8.222+01	1.244+00	0.5
$11g_{9/2}$	3.656+01	1.190+03	7.953+00	7.961+01	1.180+01	1.132+02	1.633+00	0.5
$12g_{9/2}$	3.071+01	1.184+03	8.529+00	5.581+01	1.168+01	1.133+02	1.511+00	0.4
$6h_{9/2}$	1.225+02	1.276+03	3.517+01	9.666+01	8.062+00	9.230+01	4.234–01	0.7
$7h_{9/2}$	9.001+01	1.001+03	5.380+01	1.288+01	7.880+00	9.242+01	5.337–01	0.6
$8h_{9/2}$	6.891+01	9.797+02	3.198+01	7.269+01	1.092+01	3.018+01	6.900–01	0.5
$9h_{9/2}$	5.445+01	9.652+02	2.291+01	1.175+02	1.233+01	2.803+01	8.076–01	0.6
$10h_{9/2}$	4.411+01	7.634+02	1.309+01	2.090+02	1.405+01	3.125+01	1.179+00	0.4
$11h_{9/2}$	3.645+01	7.558+02	8.350+00	2.101+02	1.482+01	4.239+01	1.619+00	0.5
$12h_{9/2}$	3.063+01	7.499+02	4.002+00	2.105+02	1.546+01	7.891+01	2.884+00	0.5
$6h_{11/2}$	1.225+02	1.276+03	5.278+01	1.865+01	7.305+00	1.051+02	6.435–01	0.6
$7h_{11/2}$	9.000+01	1.001+03	5.489+01	1.161+01	7.734+00	1.052+02	5.235–01	0.7
$8h_{11/2}$	6.891+01	9.797+02	3.222+01	7.114+01	1.090+01	3.018+01	6.885–01	0.5
$9h_{11/2}$	5.445+01	9.652+02	2.184+01	1.309+02	1.248+01	2.810+01	8.277–01	0.7
$10h_{11/2}$	4.410+01	7.634+02	1.207+01	2.288+02	1.421+01	3.255+01	1.246+00	0.5
$11h_{11/2}$	3.645+01	7.558+02	9.446+00	1.932+02	1.463+01	3.914+01	1.467+00	0.4
$12h_{11/2}$	3.063+01	7.499+02	3.792+00	2.145+02	1.550+01	8.261+01	3.027+00	0.5
$7i_{11/2}$	8.998+01	8.093+02	1.856+01	9.331+02	1.211+01	2.686+01	4.384–01	0.4
$8i_{11/2}$	6.889+01	6.370+02	1.155+01	2.606+03	1.577+01	1.943+01	1.097+00	0.2
$9i_{11/2}$	5.443+01	6.225+02	1.289+01	1.218+03	1.585+01	1.952+01	8.988–01	0.6
$10i_{11/2}$	4.409+01	6.122+02	8.280+00	1.327+03	1.798+01	2.102+01	1.725+00	0.2
$11i_{11/2}$	3.644+01	6.045+02	8.658+00	8.377+02	1.803+01	2.103+01	1.643+00	0.2
$12i_{11/2}$	3.062+01	4.793+02	2.658+00	4.247+02	1.928+01	5.823+01	4.676+00	0.2
$7i_{13/2}$	8.997+01	8.093+02	1.792+01	1.064+03	1.228+01	2.628+01	4.720–01	0.3
$8i_{13/2}$	6.889+01	6.370+02	2.377+01	5.566+02	1.398+01	1.377+01	8.580–01	0.1
$9i_{13/2}$	5.443+01	6.225+02	2.525+01	3.265+02	1.421+01	1.377+01	7.622–01	0.3
$10i_{13/2}$	4.409+01	6.122+02	1.501+01	8.678+02	1.675+01	1.429+01	1.111+00	0.2
$11i_{13/2}$	3.644+01	6.045+02	5.057+00	8.248+02	1.881+01	3.159+01	2.655+00	0.2
$12i_{13/2}$	3.062+01	4.793+02	5.084+00	5.538+02	1.896+01	3.169+01	2.669+00	0.2
$Kr^{25+}$								
$3s_{1/2}$	1.205+03	5.153+04	5.476+00	1.245+02	4.289+00	2.512+03	8.331+00	0.4
$4s_{1/2}$	6.481+02	5.097+04	1.032+01	6.333+01	3.714+00	2.513+03	8.065+00	0.9
$5s_{1/2}$	4.044+02	5.073+04	1.484+01	2.743+01	3.461+00	2.510+03	6.171+00	1.2
$6s_{1/2}$	2.763+02	5.060+04	2.110+01	1.154+01	3.265+00	2.510+03	3.995+00	1.7
$7s_{1/2}$	2.007+02	3.995+04	1.348+00	1.322+03	3.222+00	4.754+04	2.628+01	1.7
$8s_{1/2}$	1.524+02	3.154+04	1.889+00	6.072+02	3.118+00	4.754+04	1.497+01	1.7
$9s_{1/2}$	1.196+02	2.491+04	2.725+00	2.546+02	3.032+00	4.754+04	9.045+00	1.6
$10s_{1/2}$	9.636+01	2.489+04	3.348+00	1.385+02	2.981+00	4.754+04	7.060+00	1.8
$11s_{1/2}$	7.930+01	1.966+04	4.810+00	5.706+01	2.918+00	4.755+04	4.926+00	1.7
$12s_{1/2}$	6.640+01	1.553+04	3.212–03	1.254+08	2.922+00	8.502+07	3.325+03	1.3
$3p_{1/2}$	1.149+03	5.148+04	7.294+01	1.706+01	6.169+00	9.912+01	3.930–02	1.0
$4p_{1/2}$	6.251+02	4.037+04	1.082+02	4.569+00	5.669+00	9.863+01	1.534+00	0.3
$5p_{1/2}$	3.930+02	3.178+04	1.265+01	3.756+01	6.049+00	7.094+02	4.929+00	0.2
$6p_{1/2}$	2.698+02	2.506+04	1.513+01	2.125+01	5.841+00	7.094+02	4.660+00	0.5
$7p_{1/2}$	1.966+02	1.978+04	1.880+01	1.211+01	5.620+00	7.096+02	3.515+00	0.8
$8p_{1/2}$	1.497+02	1.973+04	2.280+01	7.145+00	5.436+00	7.091+02	2.705+00	1.2
$9p_{1/2}$	1.177+02	1.558+04	4.121+00	8.320+01	5.515+00	3.868+03	8.969+00	1.1
$10p_{1/2}$	9.500+01	1.231+04	4.963+00	5.382+01	5.388+00	3.867+03	6.523+00	1.4
$11p_{1/2}$	7.828+01	1.229+04	5.699+00	3.649+01	5.295+00	3.866+03	5.163+00	1.6
$12p_{1/2}$	6.562+01	9.712+03	7.284+00	2.128+01	5.168+00	3.866+03	3.733+00	1.6
$3p_{3/2}$	1.136+03	5.146+04	5.364+01	2.414+01	6.415+00	1.034+02	1.967–02	0.6
$4p_{3/2}$	6.198+02	4.037+04	7.435+01	7.377+00	5.965+00	1.046+02	1.997+00	0.2
$5p_{3/2}$	3.903+02	3.178+04	7.477+00	7.971+01	6.104+00	1.039+03	7.739+00	0.4
$6p_{3/2}$	2.683+02	2.506+04	8.716+00	4.734+01	5.922+00	1.039+03	7.775+00	0.6
$7p_{3/2}$	1.957+02	1.978+04	1.068+01	2.887+01	5.708+00	1.040+03	5.613+00	0.9
$8p_{3/2}$	1.490+02	1.973+04	1.268+01	1.801+01	5.542+00	1.039+03	4.245+00	1.3
$9p_{3/2}$	1.173+02	1.558+04	1.597+01	1.054+01	5.353+00	1.037+03	3.060+00	1.5
$10p_{3/2}$	9.469+01	1.231+04	1.866+01	6.745+00	5.223+00	1.037+03	2.442+00	1.7
$11p_{3/2}$	7.805+01	1.229+04	3.904–01	4.218+03	5.377+00	4.535+04	6.073+01	1.6
$12p_{3/2}$	6.544+01	9.711+03	4.603–01	3.054+03	5.287+00	4.536+04	4.285+01	1.7
$3d_{3/2}$	1.060+03	2.585+04	2.322+02	1.483+01	5.416+00	4.345+01	1.471+00	0.4
$4d_{3/2}$	5.917+02	2.017+04	1.551+02	1.081+01	6.421+00	4.438+01	1.086+00	0.2
$5d_{3/2}$	3.766+02	1.584+04	6.804+01	1.645+01	7.370+00	7.021+01	1.351+00	0.0
$6d_{3/2}$	2.606+02	1.247+04	4.935+01	1.308+01	7.614+00	9.103+01	1.642+00	0.1

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
7d <sub>3/2</sub>	1.909+02	9.837+03	1.771+01	2.723+01	8.007+00	2.209+02	3.083+00	0.1
8d <sub>3/2</sub>	1.459+02	9.792+03	2.016+01	1.677+01	7.823+00	2.208+02	2.603+00	0.4
9d <sub>3/2</sub>	1.151+02	7.733+03	2.347+01	1.065+01	7.598+00	2.226+02	2.092+00	0.7
10d <sub>3/2</sub>	9.309+01	7.711+03	4.151+00	8.046+00	7.907+00	1.094+03	7.717+00	0.6
11d <sub>3/2</sub>	7.686+01	6.094+03	4.629+00	6.019+01	7.774+00	1.094+03	6.208+00	0.9
12d <sub>3/2</sub>	6.452+01	6.081+03	5.242+00	4.457+01	7.637+00	1.094+03	4.924+00	1.1
3d <sub>5/2</sub>	1.058+03	2.585+04	2.140+02	1.852+01	5.472+00	4.312+01	1.493+00	0.2
4d <sub>5/2</sub>	5.905+02	2.017+04	1.439+02	1.268+01	6.537+00	4.291+01	1.107+00	0.2
5d <sub>5/2</sub>	3.761+02	1.584+04	5.937+01	1.981+01	7.542+00	7.102+01	1.455+00	0.0
6d <sub>5/2</sub>	2.602+02	1.247+04	6.563+01	9.252+00	7.444+00	7.113+01	1.429+00	0.3
7d <sub>5/2</sub>	1.907+02	9.837+03	7.478+00	7.406+01	8.219+00	4.603+02	6.058+00	0.1
8d <sub>5/2</sub>	1.457+02	9.792+03	7.767+00	4.840+01	8.173+00	4.609+02	6.067+00	0.2
9d <sub>5/2</sub>	1.150+02	7.733+03	9.194+00	3.358+01	7.933+00	4.607+02	4.399+00	0.5
10d <sub>5/2</sub>	9.302+01	7.711+03	1.029+01	2.373+01	7.779+00	4.608+02	3.594+00	0.9
11d <sub>5/2</sub>	7.680+01	6.094+03	1.014+00	5.420+02	7.885+00	4.564+03	2.544+01	0.8
12d <sub>5/2</sub>	6.448+01	6.081+03	1.091+00	4.424+02	7.796+00	4.564+03	2.112+01	1.1
4f <sub>5/2</sub>	5.767+02	8.195+03	2.180+02	6.235+00	5.013+00	1.022+02	8.434–01	0.4
5f <sub>5/2</sub>	3.692+02	7.987+03	1.373+02	1.198+01	6.801+00	4.827+01	7.758–01	0.3
6f <sub>5/2</sub>	2.563+02	6.273+03	8.881+01	1.690+01	8.181+00	3.950+01	9.017–01	0.3
7f <sub>5/2</sub>	1.883+02	4.940+03	6.013+01	1.919+01	9.189+00	3.934+01	1.135+00	0.4
8f <sub>5/2</sub>	1.441+02	4.896+03	2.198+01	3.743+01	1.019+01	8.006+01	2.051+00	0.4
9f <sub>5/2</sub>	1.138+02	3.867+03	2.391+01	2.347+01	1.005+01	8.023+01	1.854+00	0.3
10f <sub>5/2</sub>	9.220+01	3.845+03	3.996+00	9.272+01	1.064+01	4.029+02	7.724+00	0.3
11f <sub>5/2</sub>	7.619+01	3.829+03	4.279+00	7.108+01	1.052+01	4.035+02	6.730+00	0.4
12f <sub>5/2</sub>	6.401+01	3.028+03	4.700+00	5.620+01	1.036+01	4.031+02	5.551+00	0.7
4f <sub>7/2</sub>	5.763+02	8.194+03	2.058+02	7.552+00	5.064+00	1.026+02	8.450–01	0.2
5f <sub>7/2</sub>	3.690+02	7.987+03	1.415+02	1.112+01	6.726+00	4.844+01	7.651–01	0.2
6f <sub>7/2</sub>	2.562+02	6.273+03	7.664+01	2.262+01	8.477+00	3.947+01	9.560–01	0.4
7f <sub>7/2</sub>	1.882+02	4.940+03	5.958+01	1.957+01	9.203+00	3.917+01	1.137+00	0.4
8f <sub>7/2</sub>	1.441+02	4.896+03	1.732+01	4.684+01	1.035+01	9.534+01	2.426+00	0.4
9f <sub>7/2</sub>	1.138+02	3.867+03	1.806+01	3.017+01	1.031+01	9.543+01	2.350+00	0.2
10f <sub>7/2</sub>	9.217+01	3.845+03	5.325+00	6.804+01	1.064+01	2.992+02	6.128+00	0.3
11f <sub>7/2</sub>	7.616+01	3.829+03	5.832+00	5.218+01	1.047+01	2.997+02	5.092+00	0.5
12f <sub>7/2</sub>	6.399+01	3.028+03	6.462+00	4.035+01	1.029+01	2.991+02	4.181+00	0.8
5g <sub>7/2</sub>	3.682+02	4.121+03	2.795+01	1.538+03	9.585+00	5.411+01	9.035–02	0.5
6g <sub>7/2</sub>	2.557+02	4.009+03	1.455+01	8.751+02	1.225+01	5.462+01	1.486–02	0.7
7g <sub>7/2</sub>	1.879+02	3.152+03	1.338+01	3.383+02	1.295+01	5.538+01	1.104+00	0.3
8g <sub>7/2</sub>	1.438+02	3.108+03	1.074+01	1.590+02	1.366+01	6.188+01	3.485+00	0.3
9g <sub>7/2</sub>	1.136+02	2.455+03	1.129+01	9.355+01	1.367+01	6.179+01	3.423+00	0.2
10g <sub>7/2</sub>	9.204+01	2.433+03	1.229+01	6.294+01	1.349+01	6.178+01	2.992+00	0.3
11g <sub>7/2</sub>	7.607+01	2.417+03	1.385+01	4.507+01	1.317+01	6.192+01	2.446+00	0.6
12g <sub>7/2</sub>	6.392+01	1.913+03	1.795+00	8.836+01	1.369+01	4.354+02	1.532+01	0.6
5g <sub>9/2</sub>	3.681+02	4.121+03	2.726+01	1.623+03	9.632+00	5.423+01	4.150–01	0.5
6g <sub>9/2</sub>	2.556+02	4.009+03	1.421+01	8.586+02	1.238+01	5.366+01	1.527+00	0.8
7g <sub>9/2</sub>	1.878+02	3.152+03	1.413+01	3.359+02	1.284+01	5.400+01	6.033–01	0.3
8g <sub>9/2</sub>	1.438+02	3.108+03	1.329+01	1.479+02	1.356+01	5.093+01	2.949+00	0.3
9g <sub>9/2</sub>	1.136+02	2.455+03	1.394+01	8.771+01	1.356+01	5.108+01	2.861+00	0.2
10g <sub>9/2</sub>	9.203+01	2.433+03	1.541+01	5.810+01	1.332+01	5.116+01	2.453+00	0.4
11g <sub>9/2</sub>	7.605+01	2.417+03	3.431+00	7.194+01	1.384+01	2.108+02	9.166+00	0.4
12g <sub>9/2</sub>	6.391+01	1.913+03	3.782+00	6.242+01	1.357+01	2.121+02	7.453+00	0.6
6h <sub>9/2</sub>	2.556+02	2.597+03	6.499+01	1.711+02	1.081+01	1.683+01	1.046+00	0.1
7h <sub>9/2</sub>	1.878+02	2.037+03	7.947+01	5.989+01	1.095+01	1.646+01	7.370–01	0.6
8h <sub>9/2</sub>	1.438+02	1.993+03	4.144+01	2.731+02	1.430+01	1.403+01	1.158+00	0.1
9h <sub>9/2</sub>	1.136+02	1.962+03	2.076+01	2.892+02	1.597+01	2.159+01	1.945+00	0.1
10h <sub>9/2</sub>	9.202+01	1.552+03	2.396+01	1.636+02	1.549+01	2.200+01	1.558+00	0.4
11h <sub>9/2</sub>	7.605+01	1.536+03	7.258+00	1.127+02	1.672+01	6.006+01	4.437+00	0.4
12h <sub>9/2</sub>	6.390+01	1.524+03	8.119+00	8.875+01	1.637+01	5.975+01	3.605+00	0.6
6h <sub>11/2</sub>	2.556+02	2.596+03	6.448+01	1.763+02	1.084+01	1.678+01	1.052+00	0.1
7h <sub>11/2</sub>	1.878+02	2.037+03	8.598+01	5.333+01	1.095+01	1.454+01	7.371–01	0.3
8h <sub>11/2</sub>	1.438+02	1.993+03	4.819+01	2.197+02	1.396+01	1.287+01	1.055+00	0.2
9h <sub>11/2</sub>	1.136+02	1.962+03	3.857+01	1.760+02	1.453+01	1.559+01	1.129+00	0.4
10h <sub>11/2</sub>	9.201+01	1.552+03	1.663+01	1.821+02	1.599+01	2.884+01	2.109+00	0.4
11h <sub>11/2</sub>	7.604+01	1.536+03	3.586+00	9.392+01	1.700+01	1.155+02	8.729+00	0.3
12h <sub>11/2</sub>	6.389+01	1.524+03	3.934+00	7.848+01	1.675+01	1.146+02	7.308+00	0.5
7i <sub>11/2</sub>	1.878+02	1.648+03	3.470+01	6.861+02	1.257+01	2.541+01	4.294–01	0.9
8i <sub>11/2</sub>	1.438+02	1.297+03	1.750+01	2.040+03	1.686+01	2.108+01	1.600+00	0.1
9i <sub>11/2</sub>	1.136+02	1.267+03	1.858+01	1.020+03	1.713+01	2.125+01	1.267+00	0.5
10i <sub>11/2</sub>	9.201+01	1.245+03	1.525+01	7.037+02	1.859+01	2.099+01	2.079+00	0.2
11i <sub>11/2</sub>	7.604+01	1.229+03	1.540+01	4.583+02	1.884+01	2.085+01	2.066+00	0.3
12i <sub>11/2</sub>	6.389+01	9.747+02	1.146+01	2.774+02	1.886+01	2.965+01	2.425+00	0.3
7i <sub>13/2</sub>	1.877+02	1.648+03	2.169+01	2.563+03	1.467+01	2.279+01	1.682+00	0.0
8i <sub>13/2</sub>	1.437+02	1.297+03	1.403+01	2.370+03	1.761+01	2.276+01	2.454+00	0.1
9i <sub>13/2</sub>	1.136+02	1.267+03	1.379+01	1.214+03	1.812+01	2.363+01	2.042+00	0.1
10i <sub>13/2</sub>	9.200+01	1.245+03	1.417+01	6.805+02	1.838+01	2.371+01	2.038+00	0.4

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av.}} \%$
11 <i>i</i> <sub>13/2</sub>	7.603+01	1.229+03	1.459+01	4.310+02	1.850+01	2.372+01	1.981+00	0.4
12 <i>i</i> <sub>13/2</sub>	6.389+01	9.747+02	1.615+01	2.862+02	1.825+01	2.340+01	1.729+00	0.4
Kr <sup>33+</sup>								
2s <sub>1/2</sub>	4.112+03	5.444+04	2.372+00	1.372+02	5.360+00	2.512+03	1.175+01	0.2
3s <sub>1/2</sub>	1.804+03	5.213+04	6.081+00	2.925+02	4.056+00	2.513+03	1.194+01	0.1
4s <sub>1/2</sub>	1.008+03	5.133+04	9.930+00	1.465+02	3.609+00	2.513+03	1.182+01	0.3
5s <sub>1/2</sub>	6.419+02	5.097+04	1.333+01	6.866+01	3.394+00	2.512+03	9.334+00	0.5
6s <sub>1/2</sub>	4.444+02	5.077+04	1.777+01	3.189+01	3.223+00	2.511+03	6.149+00	0.8
7s <sub>1/2</sub>	3.257+02	5.065+04	2.302+01	1.530+01	3.092+00	2.511+03	4.323+00	1.1
8s <sub>1/2</sub>	2.490+02	4.000+04	2.986+01	7.378+00	2.976+00	2.511+03	3.155+00	1.3
9s <sub>1/2</sub>	1.964+02	3.994+04	1.571+00	1.583+03	3.025+00	4.753+04	2.644+01	1.3
10s <sub>1/2</sub>	1.589+02	3.155+04	2.029+00	8.262+02	2.956+00	4.752+04	1.695+01	1.3
11s <sub>1/2</sub>	1.312+02	2.492+04	2.714+00	3.995+02	2.893+00	4.752+04	1.088+01	1.3
12s <sub>1/2</sub>	1.102+02	2.490+04	3.163+00	2.446+02	2.858+00	4.751+04	8.716+00	1.5
2p <sub>1/2</sub>	4.041+03	5.437+04	6.579+02	6.458+00	3.164+00	1.026+02	1.410+00	0.5
3p <sub>1/2</sub>	1.784+03	5.211+04	7.018+02	1.056+00	3.481+00	1.019+02	8.199+01	0.3
4p <sub>1/2</sub>	9.994+02	5.133+04	2.523+02	2.434+00	4.896+00	7.386+01	1.224+00	0.4
5p <sub>1/2</sub>	6.378+02	4.038+04	6.226+01	8.500+00	5.659+00	1.855+02	2.574+00	0.4
6p <sub>1/2</sub>	4.420+02	3.183+04	7.604+01	4.098+00	5.429+00	1.846+02	2.136+00	0.4
7p <sub>1/2</sub>	3.243+02	3.172+04	9.634+01	2.155+03	5.755+00	1.209+04	8.068+01	0.3
8p <sub>1/2</sub>	2.480+02	2.504+04	1.089+00	1.622+03	5.632+00	1.207+04	6.059+01	0.6
9p <sub>1/2</sub>	1.957+02	1.978+04	1.246+00	1.217+03	5.513+00	1.206+04	4.399+01	0.8
10p <sub>1/2</sub>	1.584+02	1.974+04	1.394+00	9.125+02	5.420+00	1.206+04	3.334+01	1.0
11p <sub>1/2</sub>	1.309+02	1.560+04	1.605+00	6.633+02	5.322+00	1.206+04	2.427+01	1.3
12p <sub>1/2</sub>	1.099+02	1.557+04	1.782+00	4.918+02	5.252+00	1.206+04	1.910+01	1.5
2p <sub>3/2</sub>	3.974+03	5.430+04	5.485+02	1.099+01	3.122+00	1.027+02	1.098+00	0.2
3p <sub>3/2</sub>	1.765+03	5.209+04	6.907+01	3.795+01	5.956+00	1.032+02	2.773+02	0.7
4p <sub>3/2</sub>	9.911+02	5.132+04	8.344+01	1.137+01	5.776+00	1.056+02	2.043+00	0.4
5p <sub>3/2</sub>	6.336+02	4.038+04	9.822+01	4.750+00	5.588+00	1.055+02	2.114+00	0.2
6p <sub>3/2</sub>	4.396+02	3.183+04	2.484+01	1.946+01	5.784+00	3.934+02	4.939+00	0.4
7p <sub>3/2</sub>	3.227+02	2.512+04	2.956+01	1.126+01	5.585+00	3.942+02	3.791+00	0.7
8p <sub>3/2</sub>	2.469+02	2.504+04	3.591+01	6.580+00	5.379+00	3.936+02	2.814+00	1.0
9p <sub>3/2</sub>	1.950+02	1.978+04	5.291+00	1.089+02	5.490+00	2.583+03	1.161+01	1.0
10p <sub>3/2</sub>	1.579+02	1.562+04	6.306+00	7.262+01	5.353+00	2.581+03	8.232+00	1.2
11p <sub>3/2</sub>	1.305+02	1.559+04	7.139+00	5.051+01	5.259+00	2.579+03	6.442+00	1.4
12p <sub>3/2</sub>	1.096+02	1.232+04	8.929+00	3.079+01	5.124+00	2.578+03	4.565+00	1.4
3d <sub>3/2</sub>	1.757+03	3.315+04	6.788+02	1.972+00	3.334+00	1.393+02	8.109+01	0.2
4d <sub>3/2</sub>	9.880+02	2.578+04	1.484+02	2.240+01	7.222+00	3.196+01	1.287+00	0.7
5d <sub>3/2</sub>	6.320+02	2.021+04	1.663+02	7.610+00	7.249+00	3.181+01	1.224+00	0.2
6d <sub>3/2</sub>	4.387+02	1.590+04	5.698+01	1.367+01	8.269+00	6.553+01	2.371+00	0.2
7d <sub>3/2</sub>	3.221+02	1.579+04	5.064+00	9.085+01	8.724+00	6.541+02	1.829+01	0.2
8d <sub>3/2</sub>	2.466+02	1.246+04	5.672+00	6.783+01	8.528+00	6.567+02	1.439+01	0.4
9d <sub>3/2</sub>	1.948+02	1.241+04	6.357+00	5.240+01	8.336+00	6.588+02	1.115+01	0.7
10d <sub>3/2</sub>	1.577+02	9.804+03	7.353+00	4.042+01	8.122+00	6.559+02	8.239+00	0.9
11d <sub>3/2</sub>	1.303+02	9.776+03	8.279+00	3.109+01	7.951+00	6.564+02	6.409+00	1.2
12d <sub>3/2</sub>	1.095+02	7.728+03	9.717+00	2.312+01	7.749+00	6.566+02	4.773+00	1.4
3d <sub>5/2</sub>	1.751+03	3.314+04	7.274+02	1.609+00	3.199+00	1.405+02	7.821+01	0.3
4d <sub>5/2</sub>	9.854+02	2.578+04	1.493+02	2.332+01	7.113+00	3.211+01	1.031+00	0.4
5d <sub>5/2</sub>	6.307+02	2.021+04	1.569+02	8.507+00	7.317+00	3.161+01	1.236+00	0.3
6d <sub>5/2</sub>	4.379+02	1.590+04	9.463+00	6.339+01	8.924+00	2.986+02	1.132+01	0.1
7d <sub>5/2</sub>	3.217+02	1.579+04	9.897+00	3.724+01	8.886+00	2.988+02	1.120+01	0.2
8d <sub>5/2</sub>	2.462+02	1.246+04	1.213+01	2.872+01	8.499+00	3.001+02	7.250+00	0.5
9d <sub>5/2</sub>	1.945+02	1.241+04	1.380+01	2.097+01	8.272+00	3.018+02	5.559+00	0.8
10d <sub>5/2</sub>	1.576+02	9.804+03	1.645+01	1.505+01	7.998+00	3.025+02	4.034+00	1.1
11d <sub>5/2</sub>	1.302+02	9.776+03	7.925+00	3.184+01	7.998+00	6.465+02	6.793+00	1.3
12d <sub>5/2</sub>	1.094+02	7.728+03	9.432+00	2.375+01	7.776+00	6.466+02	4.931+00	1.4
4f <sub>5/2</sub>	9.852+02	1.320+04	4.913+02	1.669+00	4.258+00	1.072+02	6.685+01	0.7
5f <sub>5/2</sub>	6.306+02	1.284+04	2.277+02	1.212+01	7.760+00	1.957+01	8.683+01	0.2
6f <sub>5/2</sub>	4.378+02	1.008+04	9.081+01	3.193+01	1.016+01	2.347+01	1.458+00	0.1
7f <sub>5/2</sub>	3.216+02	7.940+03	8.060+01	1.887+01	1.013+01	2.951+01	1.425+00	0.4
8f <sub>5/2</sub>	2.462+02	7.864+03	2.632+01	2.527+01	1.123+01	6.803+01	3.497+00	0.2
9f <sub>5/2</sub>	1.945+02	6.211+03	3.120+01	1.689+01	1.077+01	6.975+01	2.585+00	0.6
10f <sub>5/2</sub>	1.575+02	6.174+03	2.624+00	7.485+01	1.123+01	7.519+02	2.345+01	0.6
11f <sub>5/2</sub>	1.302+02	6.147+03	2.870+00	6.652+01	1.104+01	7.529+02	1.909+01	0.8
12f <sub>5/2</sub>	1.094+02	4.861+03	3.290+00	6.241+01	1.077+01	7.492+02	1.419+01	1.0
4f <sub>7/2</sub>	9.840+02	1.320+04	4.950+02	1.631+00	4.239+00	1.034+02	6.652+01	0.7
5f <sub>7/2</sub>	6.299+02	1.284+04	1.637+02	2.709+01	8.652+00	1.876+01	1.046+00	0.1
6f <sub>7/2</sub>	4.375+02	1.008+04	1.217+02	2.314+01	9.823+00	1.878+01	1.247+00	0.2
7f <sub>7/2</sub>	3.214+02	7.940+03	5.395+01	2.718+01	1.092+01	3.353+01	2.101+00	0.2
8f <sub>7/2</sub>	2.461+02	7.864+03	9.409+01	1.620+02	1.169+01	1.680+03	8.119+01	0.3
9f <sub>7/2</sub>	1.944+02	6.211+03	9.593+01	1.019+02	1.171+01	1.680+03	8.133+01	0.3
10f <sub>7/2</sub>	1.575+02	6.174+03	1.146+00	1.357+02	1.130+01	1.665+03	5.407+01	0.6
11f <sub>7/2</sub>	1.301+02	6.147+03	1.258+00	1.337+02	1.109+01	1.670+03	4.312+01	0.9
12f <sub>7/2</sub>	1.093+02	4.861+03	1.427+00	1.395+02	1.084+01	1.673+03	3.228+01	1.0
5g <sub>7/2</sub>	6.299+02	6.647+03	3.462+01	1.553+03	1.053+01	5.066+01	2.192+00	0.2

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
6g <sub>7/2</sub>	4.375+02	6.454+03	2.337+01	5.166+02	1.264+01	5.069+01	5.108–01	0.2
7g <sub>7/2</sub>	3.214+02	5.073+03	2.053+01	1.870+02	1.341+01	5.393+01	2.618+00	0.3
8g <sub>7/2</sub>	2.461+02	4.998+03	1.785+01	8.429+01	1.404+01	5.668+01	4.115+00	0.1
9g <sub>7/2</sub>	1.944+02	4.946+03	1.858+01	4.995+01	1.407+01	5.659+01	3.982+00	0.2
10g <sub>7/2</sub>	1.575+02	3.910+03	2.197+01	3.572+01	1.359+01	5.659+01	2.955+00	0.5
11g <sub>7/2</sub>	1.301+02	3.883+03	4.244+00	4.254+01	1.400+01	2.768+02	1.294+01	0.5
12g <sub>7/2</sub>	1.093+02	3.862+03	4.643+00	3.774+01	1.377+01	2.760+02	1.065+01	0.8
5g <sub>9/2</sub>	6.295+02	6.646+03	3.125+01	1.932+03	1.055+01	5.541+01	1.964+00	0.2
6g <sub>9/2</sub>	4.372+02	6.454+03	2.034+01	5.736+02	1.276+01	5.617+01	1.721–01	0.2
7g <sub>9/2</sub>	3.212+02	5.073+03	2.115+01	2.104+02	1.312+01	5.613+01	2.377–01	0.4
8g <sub>9/2</sub>	2.460+02	4.998+03	1.630+01	8.456+01	1.413+01	6.061+01	4.522+00	0.1
9g <sub>9/2</sub>	1.943+02	4.946+03	1.690+01	5.009+01	1.416+01	6.073+01	4.384+00	0.2
10g <sub>9/2</sub>	1.574+02	3.910+03	1.976+01	3.662+01	1.370+01	6.105+01	3.284+00	0.4
11g <sub>9/2</sub>	1.301+02	3.883+03	2.265+01	2.662+01	1.334+01	6.052+01	2.611+00	0.7
12g <sub>9/2</sub>	1.093+02	3.862+03	3.169+00	4.404+01	1.383+01	3.975+02	1.546+01	0.8
6h <sub>9/2</sub>	4.372+02	4.190+03	1.189+02	6.029+01	9.756+00	2.479+01	7.373–01	0.6
7h <sub>9/2</sub>	3.212+02	4.074+03	1.244+02	5.869+01	1.177+01	1.355+01	8.383–01	0.2
8h <sub>9/2</sub>	2.460+02	3.210+03	8.975+01	1.126+02	1.381+01	1.221+01	1.011+00	0.4
9h <sub>9/2</sub>	1.943+02	3.158+03	4.102+01	1.501+02	1.546+01	2.110+01	1.620+00	0.2
10h <sub>9/2</sub>	1.574+02	3.121+03	3.965+01	9.389+01	1.543+01	2.333+01	1.567+00	0.4
11h <sub>9/2</sub>	1.301+02	2.471+03	1.556+01	6.975+01	1.647+01	5.076+01	3.496+00	0.3
12h <sub>9/2</sub>	1.093+02	2.450+03	1.796+01	5.314+01	1.605+01	4.992+01	2.742+00	0.6
6h <sub>11/2</sub>	4.371+02	4.190+03	1.142+02	6.776+01	9.870+00	2.490+01	8.020–01	0.7
7h <sub>11/2</sub>	3.212+02	4.074+03	7.967+01	1.939+02	1.324+01	1.448+01	1.106+00	0.0
8h <sub>11/2</sub>	2.459+02	3.210+03	8.623+01	9.777+01	1.344+01	1.435+01	9.640–01	0.3
9h <sub>11/2</sub>	1.943+02	3.158+03	3.233+01	1.678+02	1.597+01	2.404+01	2.046+00	0.1
10h <sub>11/2</sub>	1.574+02	3.121+03	3.643+01	9.993+01	1.570+01	2.382+01	1.726+00	0.3
11h <sub>11/2</sub>	1.301+02	2.471+03	5.890+00	5.824+01	1.689+01	1.242+02	8.791+00	0.3
12h <sub>11/2</sub>	1.093+02	2.450+03	6.416+00	4.783+01	1.667+01	1.234+02	7.462+00	0.5
7i <sub>11/2</sub>	3.212+02	2.662+03	6.211+01	3.453+02	1.244+01	2.538+01	3.100–01	0.5
8i <sub>11/2</sub>	2.459+02	2.587+03	2.890+01	1.166+03	1.611+01	2.611+01	1.455–03	0.2
9i <sub>11/2</sub>	1.943+02	2.043+03	1.889+01	7.043+02	1.831+01	2.892+01	2.410+00	0.1
10i <sub>11/2</sub>	1.574+02	2.006+03	1.951+01	3.823+02	1.857+01	2.890+01	2.420+00	0.2
11i <sub>11/2</sub>	1.301+02	1.979+03	2.009+01	2.375+02	1.869+01	2.898+01	2.369+00	0.3
12i <sub>11/2</sub>	1.093+02	1.958+03	2.036+01	1.615+02	1.882+01	2.888+01	2.353+00	0.3
7i <sub>13/2</sub>	3.211+02	2.662+03	6.356+01	3.165+02	1.232+01	2.575+01	2.975–01	0.6
8i <sub>13/2</sub>	2.458+02	2.587+03	8.023+01	2.207+02	1.453+01	1.249+01	9.240–01	0.1
9i <sub>13/2</sub>	1.943+02	2.043+03	5.777+01	3.588+02	1.644+01	1.292+01	1.117+00	0.1
10i <sub>13/2</sub>	1.573+02	2.006+03	5.591+01	2.706+02	1.697+01	1.283+01	1.108+00	0.4
11i <sub>13/2</sub>	1.300+02	1.979+03	2.443+01	2.551+02	1.883+01	2.278+01	2.171+00	0.2
12i <sub>13/2</sub>	1.093+02	1.958+03	9.117+00	1.131+02	1.941+01	5.911+01	4.938+00	0.3
Kr <sup>34+</sup>								
1s <sub>1/2</sub>	1.732+04	6.765+04	1.161+00	8.733+02	6.034+00	2.513+03	1.205+01	0.2
2s <sub>1/2</sub>	4.308+03	5.463+04	2.203+00	1.250+02	5.456+00	2.513+03	1.214+01	0.2
3s <sub>1/2</sub>	1.898+03	5.222+04	6.201+00	3.187+02	4.033+00	2.509+03	1.562+01	0.1
4s <sub>1/2</sub>	1.062+03	5.139+04	9.785+00	1.598+02	3.612+00	2.510+03	1.473+01	0.3
5s <sub>1/2</sub>	6.774+02	5.100+04	1.341+01	7.424+01	3.384+00	2.506+03	9.917+00	0.5
6s <sub>1/2</sub>	4.693+02	5.080+04	1.785+01	3.450+01	3.214+00	2.504+03	6.457+00	0.8
7s <sub>1/2</sub>	3.442+02	5.067+04	2.311+01	1.656+01	3.083+00	2.504+03	4.500+00	1.1
8s <sub>1/2</sub>	2.632+02	5.059+04	8.600–01	6.519+03	3.095+00	6.864+04	6.298+01	1.2
9s <sub>1/2</sub>	2.077+02	3.995+04	1.089+00	3.638+03	3.016+00	6.860+04	3.923+01	1.2
10s <sub>1/2</sub>	1.681+02	3.156+04	1.398+00	1.936+03	2.949+00	6.861+04	2.471+01	1.2
11s <sub>1/2</sub>	1.388+02	2.493+04	1.845+00	9.650+02	2.889+00	6.861+04	1.566+01	1.2
12s <sub>1/2</sub>	1.166+02	2.491+04	2.146+00	5.953+02	2.854+00	6.860+04	1.227+01	1.4
2p <sub>1/2</sub>	4.271+03	5.460+04	6.512+02	7.350+00	3.167+00	1.031+02	1.384+00	0.5
3p <sub>1/2</sub>	1.888+03	5.221+04	9.721+01	2.524+01	5.697+00	1.014+02	1.650–02	0.9
4p <sub>1/2</sub>	1.058+03	5.138+04	1.243+02	6.918+00	5.467+00	1.030+02	1.501+00	0.6
5p <sub>1/2</sub>	6.753+02	5.100+04	8.836+01	5.530+00	5.536+00	1.466+02	2.135+00	0.5
6p <sub>1/2</sub>	4.681+02	4.022+04	2.700+01	1.783+01	5.716+00	4.441+02	4.460+00	0.3
7p <sub>1/2</sub>	3.434+02	3.173+04	3.076+01	1.055+01	5.568+00	4.449+02	3.747+00	0.5
8p <sub>1/2</sub>	2.626+02	2.506+04	3.793+01	6.040+00	5.358+00	4.441+02	2.761+00	0.9
9p <sub>1/2</sub>	2.073+02	1.979+04	2.254+00	4.596+02	5.509+00	6.920+03	2.627+01	0.8
10p <sub>1/2</sub>	1.678+02	1.975+04	2.524+00	3.367+02	5.414+00	6.924+03	2.005+01	1.1
11p <sub>1/2</sub>	1.386+02	1.560+04	2.929+00	2.375+02	5.311+00	6.920+03	1.460+01	1.3
12p <sub>1/2</sub>	1.164+02	1.558+04	3.284+00	1.716+02	5.234+00	6.915+03	1.140+01	1.5
2p <sub>3/2</sub>	4.198+03	5.452+04	6.962+02	6.731+00	2.938+00	1.028+02	1.097+00	0.1
3p <sub>3/2</sub>	1.866+03	5.219+04	6.322+01	4.213+01	6.068+00	1.078+02	7.033–02	0.7
4p <sub>3/2</sub>	1.049+03	5.138+04	7.923+01	1.227+01	5.862+00	1.078+02	2.216+00	0.4
5p <sub>3/2</sub>	6.707+02	4.042+04	8.809+01	5.432+00	5.748+00	1.077+02	2.472+00	0.2
6p <sub>3/2</sub>	4.654+02	3.186+04	4.532+01	8.546+00	5.717+00	2.284+02	3.384+00	0.4
7p <sub>3/2</sub>	3.417+02	3.173+04	5.667+01	4.579+00	5.453+00	2.278+02	2.464+00	0.8
8p <sub>3/2</sub>	2.615+02	2.505+04	2.038–01	2.522+04	5.686+00	5.662+04	3.629+02	0.8
9p <sub>3/2</sub>	2.065+02	1.979+04	2.366–01	2.178+04	5.547+00	5.677+04	2.510+02	0.9

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av.}} \%$
10p <sub>3/2</sub>	1.673+02	1.975+04	2.320–01	1.675+04	5.546+00	5.677+04	2.510+02	0.9
11p <sub>3/2</sub>	1.382+02	1.560+04	3.071–01	1.427+04	5.343+00	5.676+04	1.317+02	1.3
12p <sub>3/2</sub>	1.161+02	1.558+04	3.387–01	1.134+04	5.274+00	5.680+04	1.019+02	1.6
3d <sub>3/2</sub>	1.862+03	4.161+04	7.185+02	1.872+00	3.333+00	1.390+02	8.094–01	0.3
4d <sub>3/2</sub>	1.047+03	2.584+04	3.056+02	6.524+00	6.232+00	2.606+01	1.004+00	0.4
5d <sub>3/2</sub>	6.698+02	2.025+04	1.360+02	1.029+01	7.611+00	3.512+01	1.417+00	0.2
6d <sub>3/2</sub>	4.649+02	2.005+04	3.233+01	2.302+01	8.554+00	1.102+02	3.794+00	0.3
7d <sub>3/2</sub>	3.414+02	1.581+04	3.632+01	1.323+01	8.367+00	1.105+02	3.267+00	0.3
8d <sub>3/2</sub>	2.613+02	1.247+04	4.435+01	7.917+00	8.021+00	1.104+02	2.419+00	0.6
9d <sub>3/2</sub>	2.064+02	1.242+04	2.338+00	1.743+02	8.405+00	1.840+03	3.098+01	0.6
10d <sub>3/2</sub>	1.671+02	9.813+03	2.669+00	1.511+02	8.199+00	1.848+03	2.265+01	0.9
11d <sub>3/2</sub>	1.381+02	9.784+03	2.967+00	1.249+02	8.049+00	1.846+03	1.764+01	1.1
12d <sub>3/2</sub>	1.160+02	9.762+03	3.210+00	1.029+02	7.936+00	1.848+03	1.437+01	1.5
3d <sub>5/2</sub>	1.855+03	3.325+04	7.732+02	1.508+00	3.192+00	1.391+02	7.796–01	0.4
4d <sub>5/2</sub>	1.044+03	2.584+04	2.642+02	9.003+00	6.443+00	2.588+01	1.013+00	0.3
5d <sub>5/2</sub>	6.683+02	2.025+04	2.057+02	6.074+00	7.227+00	2.534+01	1.171+00	0.3
6d <sub>5/2</sub>	4.641+02	2.004+04	2.613+01	2.635+01	8.751+00	1.214+02	4.812+00	0.2
7d <sub>5/2</sub>	3.409+02	1.581+04	2.969+01	1.555+01	8.534+00	1.216+02	3.991+00	0.3
8d <sub>5/2</sub>	2.610+02	1.247+04	3.593+01	9.727+00	8.189+00	1.220+02	2.924+00	0.6
9d <sub>5/2</sub>	2.062+02	1.242+04	9.052+00	3.359+01	8.355+00	4.698+02	8.636+00	0.8
10d <sub>5/2</sub>	1.670+02	9.813+03	1.060+01	2.566+01	8.104+00	4.723+02	6.259+00	1.0
11d <sub>5/2</sub>	1.380+02	9.784+03	1.193+01	1.940+01	7.927+00	4.733+02	4.917+00	1.3
12d <sub>5/2</sub>	1.159+02	7.734+03	1.442+01	1.386+01	7.683+00	4.748+02	3.570+00	1.4
4f <sub>5/2</sub>	1.044+03	1.651+04	5.279+02	1.506+00	4.239+00	1.070+02	6.649–01	0.8
5f <sub>5/2</sub>	6.683+02	1.288+04	1.189+02	4.882+01	9.174+00	2.367+01	1.121+00	0.2
6f <sub>5/2</sub>	4.640+02	1.011+04	9.098+01	3.185+01	1.021+01	2.455+01	1.500+00	0.1
7f <sub>5/2</sub>	3.409+02	9.987+03	1.996+01	4.571+01	1.142+01	8.653+01	4.789+00	0.1
8f <sub>5/2</sub>	2.609+02	7.879+03	2.103+01	2.702+01	1.138+01	8.665+01	4.559+00	0.2
9f <sub>5/2</sub>	2.061+02	7.824+03	2.546+01	1.857+01	1.098+01	8.485+01	3.297+00	0.5
10f <sub>5/2</sub>	1.670+02	6.184+03	1.018+01	2.770+01	1.104+01	2.189+02	6.653+00	0.6
11f <sub>5/2</sub>	1.380+02	6.155+03	1.139+01	2.207+01	1.080+01	2.188+02	5.294+00	0.9
12f <sub>5/2</sub>	1.159+02	6.133+03	1.269+01	1.770+01	1.057+01	2.193+02	4.246+00	1.2
4f <sub>7/2</sub>	1.043+03	1.651+04	5.352+02	1.437+00	4.193+00	1.068+02	6.576–01	0.9
5f <sub>7/2</sub>	6.676+02	1.288+04	1.615+02	2.949+01	8.819+00	1.903+01	1.095+00	0.2
6f <sub>7/2</sub>	4.636+02	1.011+04	1.154+02	2.549+01	1.007+01	1.943+01	1.363+00	0.2
7f <sub>7/2</sub>	3.406+02	9.987+03	5.711+01	2.558+01	1.091+01	3.377+01	2.100+00	0.2
8f <sub>7/2</sub>	2.608+02	7.879+03	1.719+01	3.055+01	1.143+01	1.040+02	5.357+00	0.2
9f <sub>7/2</sub>	2.060+02	7.824+03	1.950+01	2.158+01	1.114+01	1.043+02	4.234+00	0.5
10f <sub>7/2</sub>	1.669+02	6.184+03	2.280+01	1.584+01	1.076+01	1.056+02	3.177+00	0.8
11f <sub>7/2</sub>	1.379+02	6.155+03	4.685+00	4.439+01	1.099+01	4.939+02	1.242+01	0.9
12f <sub>7/2</sub>	1.159+02	6.133+03	5.184+00	3.851+01	1.078+01	4.928+02	9.898+00	1.1
5g <sub>7/2</sub>	6.676+02	8.286+03	4.471+01	1.093+03	1.007+01	4.878+01	8.817–02	0.2
6g <sub>7/2</sub>	4.636+02	6.480+03	2.867+01	4.318+02	1.252+01	4.515+01	7.335–01	0.1
7g <sub>7/2</sub>	3.406+02	6.357+03	2.539+01	1.550+02	1.354+01	4.424+01	2.795+00	0.1
8g <sub>7/2</sub>	2.608+02	5.013+03	2.836+01	7.827+01	1.345+01	4.409+01	2.501+00	0.4
9g <sub>7/2</sub>	2.060+02	4.958+03	2.774+01	4.598+01	1.370+01	4.411+01	2.784+00	0.3
10g <sub>7/2</sub>	1.669+02	3.920+03	3.238+01	3.019+01	1.326+01	4.426+01	2.178+00	0.5
11g <sub>7/2</sub>	1.379+02	3.891+03	8.261+00	3.464+01	1.384+01	1.572+02	7.078+00	0.5
12g <sub>7/2</sub>	1.159+02	3.869+03	9.124+00	2.903+01	1.359+01	1.568+02	5.770+00	0.8
5g <sub>9/2</sub>	6.671+02	8.285+03	3.711+01	1.444+03	1.049+01	5.068+01	2.179+00	0.3
6g <sub>9/2</sub>	4.634+02	6.480+03	2.411+01	4.958+02	1.268+01	5.126+01	7.031–01	0.1
7g <sub>9/2</sub>	3.404+02	6.357+03	2.360+01	1.581+02	1.364+01	4.626+01	3.037+00	0.1
8g <sub>9/2</sub>	2.606+02	5.013+03	2.570+01	8.007+01	1.363+01	4.616+01	2.818+00	0.3
9g <sub>9/2</sub>	2.059+02	4.958+03	2.606+01	4.683+01	1.376+01	4.602+01	2.949+00	0.3
10g <sub>9/2</sub>	1.668+02	3.920+03	4.520+00	4.641+01	1.421+01	2.531+02	1.414+01	0.3
11g <sub>9/2</sub>	1.379+02	3.891+03	4.971+00	3.943+01	1.398+01	2.516+02	1.169+01	0.5
12g <sub>9/2</sub>	1.158+02	3.869+03	5.477+00	3.472+01	1.374+01	2.499+02	9.533+00	0.7
6h <sub>9/2</sub>	4.634+02	4.216+03	1.234+02	6.046+01	9.808+00	2.500+01	7.531–01	0.5
7h <sub>9/2</sub>	3.404+02	4.093+03	1.326+02	5.299+01	1.170+01	1.381+01	8.299–01	0.2
8h <sub>9/2</sub>	2.606+02	3.225+03	7.735+01	1.642+02	1.461+01	1.255+01	1.225+00	0.4
9h <sub>9/2</sub>	2.059+02	3.170+03	4.090+01	1.458+02	1.558+01	2.194+01	1.712+00	0.2
10h <sub>9/2</sub>	1.668+02	3.131+03	4.073+01	9.481+01	1.580+01	2.193+01	1.719+00	0.3
11h <sub>9/2</sub>	1.379+02	2.479+03	1.368+01	6.409+01	1.657+01	6.020+01	4.150+00	0.3
12h <sub>9/2</sub>	1.158+02	2.457+03	1.533+01	5.021+01	1.620+01	6.043+01	3.343+00	0.5
6h <sub>11/2</sub>	4.632+02	4.216+03	1.230+02	6.116+01	9.805+00	2.500+01	7.467–01	0.5
7h <sub>11/2</sub>	3.403+02	4.093+03	9.064+01	1.563+02	1.305+01	1.414+01	1.063+00	0.1
8h <sub>11/2</sub>	2.606+02	3.225+03	1.021+02	7.357+01	1.313+01	1.379+01	9.014–01	0.3
9h <sub>11/2</sub>	2.059+02	3.170+03	5.861+01	1.290+02	1.529+01	1.571+01	1.381+00	0.3
10h <sub>11/2</sub>	1.668+02	3.131+03	3.784+01	9.867+01	1.599+01	2.259+01	1.855+00	0.3
11h <sub>11/2</sub>	1.378+02	2.479+03	7.344+00	5.508+01	1.689+01	1.053+02	7.662+00	0.2
12h <sub>11/2</sub>	1.158+02	2.457+03	8.168+00	4.736+01	1.656+01	1.053+02	6.150+00	0.4
7i <sub>11/2</sub>	3.403+02	2.681+03	4.707+01	9.056+02	1.411+01	2.211+01	1.382+00	0.0
8i <sub>11/2</sub>	2.606+02	2.601+03	3.817+01	8.831+02	1.644+01	1.923+01	1.443+00	0.0
9i <sub>11/2</sub>	2.059+02	2.547+03	4.214+01	4.264+02	1.653+01	1.940+01	1.103+00	0.5
10i <sub>11/2</sub>	1.668+02	2.016+03	4.867+01	2.636+02	1.705+01	1.595+01	1.206+00	0.3

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
11 <i>i</i> <sub>11/2</sub>	1.378+02	1.987+03	3.761+01	2.344+02	1.814+01	1.757+01	1.540+00	0.3
12 <i>i</i> <sub>11/2</sub>	1.158+02	1.965+03	1.599+01	1.397+02	1.885+01	3.942+01	2.907+00	0.4
7 <i>i</i> <sub>13/2</sub>	3.403+02	2.681+03	3.892+01	1.358+03	1.437+01	2.525+01	1.498+00	0.0
8 <i>i</i> <sub>13/2</sub>	2.605+02	2.601+03	2.765+01	1.214+03	1.635+01	2.752+01	6.519–01	0.2
9 <i>i</i> <sub>13/2</sub>	2.059+02	2.547+03	1.867+01	6.595+02	1.833+01	3.104+01	2.575+00	0.0
10 <i>i</i> <sub>13/2</sub>	1.667+02	2.016+03	1.932+01	3.611+02	1.853+01	3.126+01	2.437+00	0.2
11 <i>i</i> <sub>13/2</sub>	1.378+02	1.987+03	1.931+01	2.185+02	1.887+01	3.092+01	2.642+00	0.2
12 <i>i</i> <sub>13/2</sub>	1.158+02	1.965+03	1.958+01	1.478+02	1.900+01	3.082+01	2.616+00	0.3
Kr <sup>35+</sup>								
1s <sub>1/2</sub>	1.795+04	6.827+04	1.134+00	9.761+02	6.031+00	2.513+03	1.199+01	0.2
2s <sub>1/2</sub>	4.507+03	5.483+04	2.537+00	2.010+02	5.229+00	2.513+03	1.200+01	0.1
3s <sub>1/2</sub>	1.994+03	5.232+04	6.415+00	3.505+02	3.994+00	2.510+03	1.058+01	0.1
4s <sub>1/2</sub>	1.118+03	5.144+04	1.061+01	1.670+02	3.551+00	2.509+03	1.070+01	0.4
5s <sub>1/2</sub>	7.138+02	5.104+04	1.351+01	7.997+01	3.372+00	2.509+03	1.043+01	0.5
6s <sub>1/2</sub>	4.949+02	5.082+04	1.788+01	3.743+01	3.205+00	2.508+03	6.766+00	0.8
7s <sub>1/2</sub>	3.631+02	5.069+04	2.310+01	1.802+01	3.074+00	2.512+03	4.669+00	1.1
8s <sub>1/2</sub>	2.777+02	5.060+04	3.489–01	4.205+04	3.086+00	1.695+05	1.610+02	1.2
9s <sub>1/2</sub>	2.193+02	3.997+04	4.407–01	2.436+04	3.008+00	1.695+05	9.838+01	1.2
10s <sub>1/2</sub>	1.775+02	3.157+04	5.631–01	1.343+04	2.942+00	1.695+05	6.048+01	1.2
11s <sub>1/2</sub>	1.466+02	2.494+04	5.695–01	1.028+04	2.932+00	1.695+05	6.042+01	0.9
12s <sub>1/2</sub>	1.231+02	2.492+04	8.398–01	4.479+03	2.854+00	1.695+05	2.917+01	1.3
2p <sub>1/2</sub>	4.507+03	5.483+04	7.145+02	6.480+00	3.095+00	1.031+02	1.325+00	0.4
3p <sub>1/2</sub>	1.994+03	5.232+04	9.616+01	2.597+01	5.770+00	9.980+01	1.917–02	0.9
4p <sub>1/2</sub>	1.118+03	5.144+04	1.234+02	7.108+00	5.536+00	1.009+02	1.584+00	0.5
5p <sub>1/2</sub>	7.138+02	5.104+04	1.511+02	2.740+00	5.313+00	1.009+02	1.652+00	0.4
6p <sub>1/2</sub>	4.949+02	4.024+04	6.419+00	1.386+02	5.890+00	1.703+03	1.698+01	0.3
7p <sub>1/2</sub>	3.631+02	3.175+04	7.255+00	9.174+01	5.747+00	1.709+03	1.345+01	0.4
8p <sub>1/2</sub>	2.777+02	2.507+04	8.405+00	6.152+01	5.596+00	1.711+03	9.904+00	0.7
9p <sub>1/2</sub>	2.193+02	2.501+04	9.597+00	4.185+01	5.470+00	1.712+03	7.515+00	1.0
10p <sub>1/2</sub>	1.775+02	1.976+04	1.143+01	2.725+01	5.331+00	1.711+03	5.471+00	1.2
11p <sub>1/2</sub>	1.466+02	1.561+04	1.383+01	1.716+01	5.198+00	1.709+03	4.061+00	1.4
12p <sub>1/2</sub>	1.231+02	1.559+04	1.589+01	1.154+01	5.101+00	1.708+03	3.270+00	1.6
2p <sub>3/2</sub>	4.427+03	5.475+04	8.734+02	4.153+00	2.766+00	1.032+02	1.098+00	0.1
3p <sub>3/2</sub>	1.971+03	5.230+04	8.955+02	7.465–01	3.133+00	1.043+02	7.600–01	0.7
4p <sub>3/2</sub>	1.108+03	5.143+04	5.112+02	8.787–01	3.801+00	1.031+02	8.237–01	1.6
5p <sub>3/2</sub>	7.088+02	5.104+04	1.040+02	4.609+00	5.659+00	9.959+01	2.222+00	0.3
6p <sub>3/2</sub>	4.919+02	4.024+04	8.507+00	8.202+01	5.996+00	1.047+03	1.550+01	0.3
7p <sub>3/2</sub>	3.613+02	3.175+04	1.018+01	5.357+01	5.789+00	1.039+03	1.069+01	0.6
8p <sub>3/2</sub>	2.765+02	2.507+04	1.217+01	3.503+01	5.600+00	1.040+03	7.467+00	0.9
9p <sub>3/2</sub>	2.184+02	1.980+04	1.481+01	2.219+01	5.420+00	1.041+03	5.235+00	1.1
10p <sub>3/2</sub>	1.769+02	1.976+04	1.713+01	1.468+01	5.291+00	1.043+03	4.035+00	1.4
11p <sub>3/2</sub>	1.461+02	1.561+04	3.690+00	1.738+02	5.304+00	5.083+03	1.260+01	1.3
12p <sub>3/2</sub>	1.228+02	1.559+04	4.104+00	1.263+02	5.229+00	5.085+03	9.987+00	1.6
3d <sub>3/2</sub>	1.971+03	4.172+04	7.700+02	1.706+00	3.316+00	1.388+02	8.055–01	0.2
4d <sub>3/2</sub>	1.108+03	3.250+04	3.733+02	4.294+00	5.723+00	3.173+01	8.826–01	0.4
5d <sub>3/2</sub>	7.088+02	2.550+04	1.686+02	7.859+00	7.397+00	3.287+01	1.292+00	0.3
6d <sub>3/2</sub>	4.919+02	2.007+04	3.731+01	1.988+01	8.547+00	1.008+02	3.587+00	0.2
7d <sub>3/2</sub>	3.613+02	1.583+04	4.264+01	1.130+01	8.326+00	1.010+02	3.005+00	0.3
8d <sub>3/2</sub>	2.765+02	1.574+04	5.096+01	6.798+00	8.008+00	1.012+02	2.292+00	0.7
9d <sub>3/2</sub>	2.184+02	1.243+04	1.216+01	2.524+01	8.265+00	3.987+02	6.758+00	0.7
10d <sub>3/2</sub>	1.769+02	1.239+04	1.376+01	1.879+01	8.067+00	3.997+02	5.236+00	1.0
11d <sub>3/2</sub>	1.461+02	9.792+03	1.640+01	1.350+01	7.825+00	3.995+02	3.848+00	1.2
12d <sub>3/2</sub>	1.228+02	9.769+03	1.700+00	2.624+02	7.964+00	3.641+03	2.792+01	1.5
3d <sub>5/2</sub>	1.963+03	4.171+04	8.299+02	1.369+00	3.170+00	1.390+02	7.750–01	0.4
4d <sub>5/2</sub>	1.105+03	3.250+04	6.494+02	9.534–01	3.808+00	1.387+02	5.979–01	2.0
5d <sub>5/2</sub>	7.071+02	2.550+04	1.609+02	8.742+00	7.605+00	2.964+01	1.374+00	0.2
6d <sub>5/2</sub>	4.910+02	2.007+04	5.568+01	1.344+01	8.534+00	6.428+01	2.827+00	0.2
7d <sub>5/2</sub>	3.607+02	1.583+04	7.010+01	7.005+00	8.109+00	6.404+01	2.063+00	0.5
8d <sub>5/2</sub>	2.761+02	1.574+04	1.033+00	4.077+02	8.677+00	3.655+03	8.822+01	0.5
9d <sub>5/2</sub>	2.181+02	1.243+04	1.164+00	3.850+02	8.469+00	3.677+03	6.625+01	0.7
10d <sub>5/2</sub>	1.767+02	1.239+04	1.298+00	3.450+02	8.302+00	3.662+03	5.093+01	1.0
11d <sub>5/2</sub>	1.460+02	9.792+03	1.491+00	3.154+02	8.107+00	3.654+03	3.677+01	1.2
12d <sub>5/2</sub>	1.227+02	9.769+03	1.673+00	2.722+02	7.960+00	3.641+03	2.807+01	1.2
4f <sub>5/2</sub>	1.105+03	1.657+04	5.521+02	1.477+00	4.265+00	1.068+02	6.691–01	0.7
5f <sub>5/2</sub>	7.071+02	1.292+04	1.341+02	4.115+01	9.054+00	2.324+01	1.096+00	0.2
6f <sub>5/2</sub>	4.910+02	1.014+04	1.123+02	2.450+01	9.839+00	2.397+01	1.302+00	0.2
7f <sub>5/2</sub>	3.607+02	1.001+04	4.024+01	3.082+01	1.112+01	4.923+01	2.807+00	0.1
8f <sub>5/2</sub>	2.761+02	7.894+03	4.656+01	1.774+01	1.080+01	4.950+01	2.268+00	0.3
9f <sub>5/2</sub>	2.181+02	7.836+03	5.785+00	4.487+01	1.138+01	3.532+02	1.381+01	0.4
10f <sub>5/2</sub>	1.767+02	7.795+03	6.322+00	3.715+01	1.117+01	3.568+02	1.122+01	0.6
11f <sub>5/2</sub>	1.460+02	6.163+03	7.179+00	3.202+01	1.089+01	3.576+02	8.566+00	0.8
12f <sub>5/2</sub>	1.227+02	6.139+03	7.904+00	2.685+01	1.069+01	3.588+02	6.902+00	1.1
4f <sub>7/2</sub>	1.103+03	1.657+04	5.594+02	1.410+00	4.217+00	1.071+02	6.618–01	0.8

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av.}} \%$
$5f_{7/2}$	7.063+02	1.292+04	1.158+02	5.370+01	9.372+00	2.363+01	1.188+00	0.2
$6f_{7/2}$	4.905+02	1.014+04	9.548+01	3.056+01	1.017+01	2.490+01	1.470+00	0.1
$7f_{7/2}$	3.604+02	1.001+04	1.010+02	1.539+01	1.011+01	2.582+01	1.364+00	0.3
$8f_{7/2}$	2.759+02	7.894+03	2.082+01	2.700+01	1.138+01	9.210+01	4.743+00	0.2
$9f_{7/2}$	2.180+02	7.836+03	2.399+01	1.888+01	1.104+01	9.263+01	3.659+00	0.5
$10f_{7/2}$	1.765+02	7.795+03	2.487+00	7.159+01	1.128+01	8.650+02	2.826+01	0.6
$11f_{7/2}$	1.459+02	6.163+03	2.796+00	6.956+01	1.102+01	8.696+02	2.155+01	0.8
$12f_{7/2}$	1.226+02	6.139+03	3.101+00	6.293+01	1.082+01	8.627+02	1.706+01	1.0
$5g_{7/2}$	7.063+02	8.324+03	4.743+01	1.025+03	1.006+01	4.909+01	7.145–02	0.2
$6g_{7/2}$	4.905+02	6.507+03	2.840+01	4.306+02	1.255+01	4.798+01	6.764–01	0.1
$7g_{7/2}$	3.604+02	6.377+03	2.762+01	1.660+02	1.308+01	4.883+01	1.259+00	0.2
$8g_{7/2}$	2.759+02	5.028+03	2.322+01	7.419+01	1.390+01	5.065+01	3.547+00	0.1
$9g_{7/2}$	2.180+02	4.970+03	2.404+01	4.400+01	1.395+01	5.053+01	3.462+00	0.2
$10g_{7/2}$	1.765+02	4.928+03	2.372+01	3.032+01	1.347+01	4.998+01	2.579+00	0.5
$11g_{7/2}$	1.459+02	3.899+03	2.255+00	5.084+01	1.404+01	5.839+02	2.661+01	0.5
$12g_{7/2}$	1.226+02	3.876+03	2.438+00	4.893+01	1.381+01	5.888+02	2.202+01	0.7
$5g_{9/2}$	7.058+02	8.324+03	4.630+01	1.079+03	1.011+01	4.903+01	9.609–02	0.2
$6g_{9/2}$	4.902+02	6.507+03	1.891+01	3.522+02	1.382+01	5.224+01	6.672+00	0.5
$7g_{9/2}$	3.602+02	6.377+03	2.243+01	1.565+02	1.366+01	5.146+01	3.204+00	0.1
$8g_{9/2}$	2.758+02	5.028+03	2.406+01	7.834+01	1.370+01	5.148+01	3.117+00	0.2
$9g_{9/2}$	2.179+02	4.970+03	2.471+01	4.576+01	1.378+01	5.146+01	3.193+00	0.3
$10g_{9/2}$	1.765+02	4.928+03	2.704+01	3.100+01	1.354+01	5.192+01	2.729+00	0.5
$11g_{9/2}$	1.459+02	3.899+03	7.775+00	3.424+01	1.386+01	1.756+02	7.876+00	0.5
$12g_{9/2}$	1.226+02	3.875+03	8.535+00	2.887+01	1.362+01	1.756+02	6.492+00	0.7
$6h_{9/2}$	4.902+02	5.242+03	1.146+02	9.030+01	1.018+01	2.473+01	7.584–01	0.5
$7h_{9/2}$	3.602+02	4.113+03	1.357+02	5.471+01	1.180+01	1.397+01	8.455–01	0.2
$8h_{9/2}$	2.758+02	4.029+03	9.725+01	9.992+01	1.378+01	1.290+01	1.021+00	0.3
$9h_{9/2}$	2.179+02	3.182+03	5.178+01	1.244+02	1.529+01	1.940+01	1.496+00	0.2
$10h_{9/2}$	1.765+02	3.140+03	3.622+01	9.180+01	1.594+01	2.565+01	1.954+00	0.2
$11h_{9/2}$	1.459+02	3.110+03	1.175+01	5.915+01	1.665+01	7.326+01	4.991+00	0.3
$12h_{9/2}$	1.226+02	2.463+03	1.283+01	4.737+01	1.631+01	7.496+01	4.132+00	0.4
$6h_{11/2}$	4.900+02	5.242+03	1.143+02	9.411+01	1.017+01	2.450+01	6.454–01	0.4
$7h_{11/2}$	3.601+02	4.113+03	4.048+01	5.151+02	1.398+01	2.823+01	3.795–01	0.2
$8h_{11/2}$	2.757+02	4.029+03	3.016+01	2.822+02	1.573+01	2.853+01	2.215+00	0.1
$9h_{11/2}$	2.178+02	3.182+03	3.031+01	1.523+02	1.606+01	2.855+01	2.305+00	0.1
$10h_{11/2}$	1.764+02	3.140+03	3.235+01	9.300+01	1.595+01	2.890+01	2.083+00	0.3
$11h_{11/2}$	1.458+02	3.110+03	2.215+01	6.455+01	1.619+01	4.228+01	2.719+00	0.4
$12h_{11/2}$	1.225+02	2.463+03	1.693+01	4.788+01	1.613+01	5.873+01	3.183+00	0.5
$7i_{11/2}$	3.601+02	2.701+03	4.989+01	8.470+02	1.411+01	2.213+01	1.395+00	0.0
$8i_{11/2}$	2.757+02	2.617+03	3.851+01	8.702+02	1.649+01	2.006+01	1.473+00	0.0
$9i_{11/2}$	2.178+02	2.559+03	3.416+01	5.574+02	1.770+01	1.991+01	1.726+00	0.0
$10i_{11/2}$	1.764+02	2.517+03	3.568+01	3.219+02	1.785+01	2.001+01	1.611+00	0.3
$11i_{11/2}$	1.458+02	1.995+03	3.681+01	2.117+02	1.805+01	1.959+01	1.584+00	0.2
$12i_{11/2}$	1.225+02	1.971+03	3.360+01	1.388+02	1.791+01	2.332+01	1.554+00	0.4
$7i_{13/2}$	3.600+02	2.701+03	4.970+01	8.578+02	1.412+01	2.214+01	1.387+00	0.0
$8i_{13/2}$	2.756+02	2.617+03	2.929+01	1.120+03	1.682+01	2.488+01	1.656+00	0.0
$9i_{13/2}$	2.178+02	2.559+03	2.942+01	5.727+02	1.730+01	2.540+01	1.364+00	0.4
$10i_{13/2}$	1.764+02	2.517+03	2.248+01	3.402+02	1.870+01	2.738+01	2.498+00	0.1
$11i_{13/2}$	1.458+02	1.995+03	2.378+01	2.129+02	1.865+01	2.758+01	2.289+00	0.2
$12i_{13/2}$	1.225+02	1.971+03	2.395+01	1.458+02	1.878+01	2.764+01	2.265+00	0.3
Xe <sup>7+</sup>								
$5s_{1/2}$	1.044+02	5.043+04	1.268+01	2.121+00	4.259+00	2.507+03	2.299–04	0.7
$6s_{1/2}$	5.631+01	3.980+04	3.030–04	8.209+06	4.024+00	1.779+08	6.857+03	2.4
$7s_{1/2}$	3.557+01	2.483+04	5.250–03	1.624+05	3.837+00	1.650+07	2.001+03	3.5
$8s_{1/2}$	2.455+01	1.961+04	1.040–03	3.483+06	3.662+00	1.779+08	6.858+03	4.8
$9s_{1/2}$	1.798+01	1.223+04	2.880–01	3.333+02	3.460+00	8.650+06	9.211+00	5.8
$10s_{1/2}$	1.373+01	1.223+04	3.612–01	1.736+02	3.419+00	8.650+06	1.048+01	6.3
$11s_{1/2}$	1.084+01	9.657+03	7.382–02	2.501+03	3.370+00	9.567+08	3.540+01	6.3
$12s_{1/2}$	8.768+00	7.627+03	7.600–02	1.886+03	3.352+00	9.567+08	3.869+01	6.6
$5p_{1/2}$	9.012+01	3.984+04	4.298+01	2.193–01	7.713+00	1.905+02	1.755+00	1.7
$6p_{1/2}$	5.041+01	2.484+04	8.519+00	1.535–01	7.990+00	8.326+02	9.381+00	1.2
$7p_{1/2}$	3.253+01	1.961+04	2.137+01	2.128–01	7.854+00	3.585+03	3.521+01	1.4
$8p_{1/2}$	2.278+01	1.224+04	1.311+00	5.074–02	8.457+00	3.606+03	7.249+01	3.7
$9p_{1/2}$	1.685+01	9.663+03	1.211+00	2.868–02	8.544+00	3.596+03	8.132+01	4.1
$10p_{1/2}$	1.298+01	7.631+03	1.185+00	2.072–02	8.534+00	3.598+03	8.236+01	4.2
$11p_{1/2}$	1.030+01	7.628+03	1.182+00	1.537–02	8.520+00	3.597+03	8.198+01	4.5
$12p_{1/2}$	8.376+00	6.025+03	1.160+00	1.210–02	8.506+00	3.597+03	8.223+01	4.5
$5p_{3/2}$	8.786+01	3.148+04	1.024+01	4.163–01	8.059+00	5.502+02	5.740+00	1.6
$6p_{3/2}$	4.950+01	2.484+04	1.282+00	1.009+00	7.695+00	5.594+03	4.378+01	1.1
$7p_{3/2}$	3.206+01	1.550+04	2.947+00	7.612–01	7.202+00	3.583+03	1.550+01	3.0
$8p_{3/2}$	2.250+01	1.224+04	1.971+00	1.273+00	6.855+00	7.762+03	1.859+01	4.8
$9p_{3/2}$	1.668+01	9.663+03	2.625+00	9.814–01	6.604+00	7.760+03	1.154+01	6.3
$10p_{3/2}$	1.286+01	7.631+03	6.484–01	8.065–03	9.213+00	3.562+03	1.596+02	7.1
$11p_{3/2}$	1.022+01	7.628+03	6.667–01	7.587–03	9.099+00	3.630+03	1.488+02	7.3
$12p_{3/2}$	8.315+00	6.025+03	6.644–01	7.141–03	9.019+00	3.638+03	1.419+02	7.2

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
5d <sub>3/2</sub>	6.657+01	1.553+04	9.866+01	1.138+00	1.062+01	2.203+01	3.716–01	3.2
6d <sub>3/2</sub>	4.012+01	9.686+03	8.070+01	5.047–01	1.084+01	2.555+01	4.767–01	1.9
7d <sub>3/2</sub>	2.703+01	7.645+03	7.173+01	2.611–01	1.086+01	2.916+01	5.472–01	1.4
8d <sub>3/2</sub>	1.948+01	6.036+03	6.645+01	1.524–01	1.086+01	3.210+01	5.970–01	1.2
9d <sub>3/2</sub>	1.472+01	4.767+03	6.298+01	9.610–02	1.083+01	3.470+01	6.344–01	1.4
10d <sub>3/2</sub>	1.152+01	4.763+03	6.059+01	6.426–02	1.081+01	3.690+01	6.633–01	1.5
11d <sub>3/2</sub>	9.261+00	3.762+03	5.886+01	4.510–02	1.080+01	3.871+01	6.860–01	1.7
12d <sub>3/2</sub>	7.608+00	3.761+03	5.761+01	3.292–02	1.078+01	4.014+01	7.031–01	2.0
5d <sub>5/2</sub>	6.621+01	1.553+04	9.570+01	1.218+00	1.063+01	2.181+01	3.771–01	2.9
6d <sub>5/2</sub>	3.996+01	9.686+03	7.788+01	5.357–01	1.084+01	2.559+01	4.903–01	1.7
7d <sub>5/2</sub>	2.694+01	7.645+03	6.899+01	2.768–01	1.086+01	2.937+01	5.666–01	1.3
8d <sub>5/2</sub>	1.943+01	6.036+03	6.373+01	1.612–01	1.085+01	3.252+01	6.212–01	1.2
9d <sub>5/2</sub>	1.469+01	4.767+03	6.030+01	1.017–01	1.083+01	3.522+01	6.620–01	1.3
10d <sub>5/2</sub>	1.149+01	4.763+03	5.797+01	6.848–02	1.081+01	3.728+01	6.929–01	1.5
11d <sub>5/2</sub>	9.243+00	3.762+03	5.624+01	4.770–02	1.079+01	3.945+01	7.186–01	1.6
12d <sub>5/2</sub>	7.594+00	3.761+03	5.500+01	3.504–02	1.078+01	4.068+01	7.373–01	1.7
4f <sub>5/2</sub>	7.211+01	3.825+03	3.613+01	1.348–03	1.614+01	6.018+01	1.351+02	3.7
5f <sub>5/2</sub>	4.356+01	3.796+03	1.805+01	6.039–04	1.727+01	7.419+01	1.388+02	2.2
6f <sub>5/2</sub>	2.913+01	2.993+03	7.538+00	1.239+01	1.209+01	1.290+02	1.492–04	1.9
7f <sub>5/2</sub>	2.083+01	2.985+03	6.785+00	7.453+00	1.199+01	1.538+02	5.322–06	1.9
8f <sub>5/2</sub>	1.563+01	2.980+03	5.979+00	4.905+00	1.197+01	1.807+02	4.360–05	2.0
9f <sub>5/2</sub>	1.216+01	2.976+03	5.307+00	3.427+00	1.196+01	2.069+02	4.153–07	2.0
10f <sub>5/2</sub>	9.726+00	2.974+03	4.828+00	2.512+00	1.193+01	2.346+02	3.479–05	2.2
11f <sub>5/2</sub>	7.956+00	2.972+03	4.406+00	1.892+00	1.195+01	2.557+02	1.575–07	2.2
12f <sub>5/2</sub>	6.629+00	2.971+03	4.091+00	1.462+00	1.194+01	2.798+02	2.015–05	2.2
4f <sub>7/2</sub>	7.205+01	3.825+03	3.173+01	1.161–03	1.612+01	6.798+01	1.507+02	3.4
5f <sub>7/2</sub>	4.351+01	3.796+03	1.744+01	5.483–04	1.721+01	7.793+01	1.458+02	2.2
6f <sub>7/2</sub>	2.910+01	2.993+03	7.377+00	1.271+01	1.207+01	1.320+02	2.118–05	1.9
7f <sub>7/2</sub>	2.082+01	2.985+03	6.641+00	7.677+00	1.197+01	1.573+02	3.039–05	1.9
8f <sub>7/2</sub>	1.562+01	2.980+03	5.824+00	5.061+00	1.195+01	1.852+02	1.534–06	1.9
9f <sub>7/2</sub>	1.215+01	2.976+03	5.172+00	3.551+00	1.194+01	2.131+02	2.735–05	2.0
10f <sub>7/2</sub>	9.721+00	2.974+03	4.644+00	2.595+00	1.194+01	2.394+02	1.438–05	2.1
11f <sub>7/2</sub>	7.952+00	2.972+03	4.270+00	1.968+00	1.192+01	2.664+02	1.637–05	1.8
12f <sub>7/2</sub>	6.626+00	2.971+03	3.954+00	1.527+00	1.192+01	2.889+02	2.554–05	2.2
5g <sub>7/2</sub>	3.500+01	7.543+02	3.233+01	1.854+00	1.509+01	9.157+00	4.196+00	1.2
6g <sub>7/2</sub>	2.435+01	5.925+02	2.669+01	1.855+00	1.629+01	9.576+00	5.386+00	0.6
7g <sub>7/2</sub>	1.790+01	5.860+02	1.558+01	5.754–01	1.640+01	1.828+01	1.003+01	0.6
8g <sub>7/2</sub>	1.370+01	4.624+02	1.696+01	2.845–01	1.640+01	1.895+01	9.924+00	0.6
9g <sub>7/2</sub>	1.082+01	4.595+02	1.501+01	1.554–01	1.642+01	2.268+01	1.160+01	0.8
10g <sub>7/2</sub>	8.764+00	4.574+02	1.711+01	8.639–02	1.629+01	2.263+01	1.094+01	1.2
11g <sub>7/2</sub>	7.241+00	3.616+02	1.864+01	5.330–02	1.619+01	2.293+01	1.049+01	0.7
12g <sub>7/2</sub>	6.082+00	3.604+02	1.984+01	3.532–02	1.612+01	2.305+01	1.025+01	0.9
5g <sub>9/2</sub>	3.500+01	7.543+02	3.108+01	1.830+00	1.507+01	9.569+00	4.362+00	1.2
6g <sub>9/2</sub>	2.435+01	5.925+02	2.090+01	1.035+00	1.594+01	1.407+01	7.258+00	0.6
7g <sub>9/2</sub>	1.790+01	5.860+02	1.462+01	5.536–01	1.640+01	1.943+01	1.069+01	0.6
8g <sub>9/2</sub>	1.370+01	4.624+02	1.572+01	3.043–01	1.648+01	1.962+01	1.049+01	0.5
9g <sub>9/2</sub>	1.082+01	4.595+02	1.834+01	1.659–01	1.639+01	1.908+01	9.645+00	1.1
10g <sub>9/2</sub>	8.764+00	4.574+02	1.989+01	8.674–02	1.625+01	2.011+01	9.597+00	1.5
11g <sub>9/2</sub>	7.241+00	3.616+02	2.126+01	5.613–02	1.618+01	2.034+01	9.247+00	0.9
12g <sub>9/2</sub>	6.082+00	3.604+02	2.219+01	3.611–02	1.610+01	2.103+01	9.210+00	0.7
6h <sub>9/2</sub>	2.419+01	3.041+02	5.147+01	1.036–01	1.559+01	5.587+00	3.907+00	0.2
7h <sub>9/2</sub>	1.778+01	2.388+02	5.780+01	8.527–01	1.757+01	3.207+00	3.210+00	0.3
8h <sub>9/2</sub>	1.361+01	2.346+02	2.133+01	1.441+00	1.872+01	6.369+00	8.676+00	0.5
9h <sub>9/2</sub>	1.075+01	2.318+02	2.067+01	1.516+00	1.920+01	6.143+00	8.655+00	0.2
10h <sub>9/2</sub>	8.711+00	1.833+02	2.197+01	7.710–01	1.910+01	6.376+00	8.711+00	0.1
11h <sub>9/2</sub>	7.199+00	1.818+02	2.169+01	4.094–01	1.902+01	6.957+00	9.344+00	0.3
12h <sub>9/2</sub>	6.049+00	1.806+02	2.270+01	2.425–01	1.893+01	7.117+00	9.405+00	0.4
6h <sub>11/2</sub>	2.419+01	3.041+02	4.885+01	2.047–01	1.595+01	4.994+00	3.870+00	0.1
7h <sub>11/2</sub>	1.778+01	2.388+02	5.115+01	1.100+00	1.771+01	3.390+00	3.585+00	0.3
8h <sub>11/2</sub>	1.361+01	2.346+02	2.763+01	2.370+00	1.888+01	4.719+00	6.391+00	0.2
9h <sub>11/2</sub>	1.075+01	2.318+02	2.924+01	1.280+00	1.892+01	4.870+00	6.415+00	0.3
10h <sub>11/2</sub>	8.711+00	1.833+02	3.038+01	9.347–01	1.902+01	4.807+00	6.282+00	0.0
11h <sub>11/2</sub>	7.199+00	1.818+02	3.209+01	5.080–01	1.893+01	4.932+00	6.347+00	0.3
12h <sub>11/2</sub>	6.049+00	1.806+02	3.713+01	3.403–01	1.884+01	4.575+00	5.629+00	0.3
7i <sub>11/2</sub>	1.777+01	1.556+02	5.798+00	4.944–01	1.855+01	2.027+01	4.417+01	0.1
8i <sub>11/2</sub>	1.361+01	1.515+02	5.178+00	7.554–01	2.047+01	1.675+01	4.617+01	0.1
9i <sub>11/2</sub>	1.075+01	1.486+02	5.100+00	7.973–01	2.144+01	1.514+01	4.353+01	0.5
10i <sub>11/2</sub>	8.708+00	1.466+02	5.038+00	5.792–01	2.178+01	1.528+01	4.356+01	0.8
11i <sub>11/2</sub>	7.197+00	1.451+02	6.136+00	2.743–01	2.166+01	1.388+01	4.455+01	0.1
12i <sub>11/2</sub>	6.047+00	1.149+02	6.428+00	1.832–01	2.168+01	1.376+01	4.465+01	0.2
7i <sub>13/2</sub>	1.777+01	1.556+02	2.352+01	2.870–01	1.840+01	5.336+00	1.084+01	0.0
8i <sub>13/2</sub>	1.361+01	1.515+02	1.724+01	1.366+00	2.030+01	5.342+00	1.418+01	0.1
9i <sub>13/2</sub>	1.075+01	1.486+02	1.764+01	2.212+00	2.119+01	4.729+00	1.348+01	0.1
10i <sub>13/2</sub>	8.708+00	1.466+02	1.829+01	1.621+00	2.145+01	4.667+00	1.377+01	0.2

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}\%$
11 <i>i</i> <sub>13/2</sub>	7.197+00	1.451+02	1.874+01	1.175+00	2.160+01	4.641+00	1.415+01	0.1
12 <i>i</i> <sub>13/2</sub>	6.047+00	1.149+02	1.894+01	8.373-01	2.165+01	4.726+00	1.425+01	0.2
Xe <sup>17+</sup>								
5s <sub>1/2</sub>	3.035+02	5.063+04	2.573+01	3.430+00	3.805+00	2.509+03	2.914+00	1.0
6s <sub>1/2</sub>	1.888+02	5.052+04	3.361+01	1.532+00	3.612+00	2.508+03	2.680+00	2.3
7s <sub>1/2</sub>	1.292+02	5.046+04	1.012-02	1.446+06	3.479+00	1.650+07	2.000+03	3.3
8s <sub>1/2</sub>	9.406+01	3.984+04	1.268-02	8.714+05	3.413+00	1.650+07	2.000+03	3.1
9s <sub>1/2</sub>	7.156+01	2.486+04	1.259-02	6.985+05	3.385+00	1.650+07	2.000+03	3.1
10s <sub>1/2</sub>	5.627+01	2.485+04	7.808-03	2.577+06	3.228+00	9.650+07	1.857+03	3.4
11s <sub>1/2</sub>	4.542+01	1.963+04	2.165-02	3.832+05	3.155+00	1.065+08	4.991+02	3.4
12s <sub>1/2</sub>	3.743+01	1.550+04	3.102-01	2.132+03	3.088+00	1.065+08	2.798+01	3.3
5p <sub>1/2</sub>	2.817+02	5.061+04	2.393+01	1.616+00	7.028+00	5.412+02	2.527+00	0.8
6p <sub>1/2</sub>	1.778+02	3.992+04	3.299+01	9.535-01	6.591+00	5.412+02	2.642+00	1.3
7p <sub>1/2</sub>	1.229+02	3.151+04	2.278-02	3.394+03	6.578+00	8.473+05	2.472+03	1.9
8p <sub>1/2</sub>	9.007+01	2.488+04	2.615-01	2.633+02	6.318+00	9.885+04	1.791+02	2.9
9p <sub>1/2</sub>	6.889+01	1.965+04	3.597-01	2.268+02	6.098+00	9.885+04	1.062+02	3.7
10p <sub>1/2</sub>	5.440+01	1.964+04	4.570-01	1.769+02	5.949+00	9.884+04	7.071+01	4.6
11p <sub>1/2</sub>	4.405+01	1.551+04	1.782+00	2.397+01	5.773+00	3.709+04	1.559+01	5.1
12p <sub>1/2</sub>	3.640+01	1.225+04	2.680+00	1.247+01	5.628+00	3.709+04	9.040+00	5.2
5p <sub>3/2</sub>	2.762+02	5.060+04	2.057+01	2.526+00	6.962+00	5.310+02	3.549+00	0.5
6p <sub>3/2</sub>	1.751+02	3.157+04	2.639+00	1.627+01	6.737+00	5.024+03	2.428+01	1.2
7p <sub>3/2</sub>	1.213+02	2.491+04	8.889-02	1.365+03	6.438+00	1.987+05	5.815+02	2.2
8p <sub>3/2</sub>	8.909+01	2.488+04	2.291-01	5.556+02	6.208+00	9.891+04	1.857+02	3.1
9p <sub>3/2</sub>	6.823+01	1.965+04	3.107-01	4.700+02	5.998+00	9.892+04	1.096+02	3.8
10p <sub>3/2</sub>	5.394+01	1.552+04	4.330-01	3.351+02	5.820+00	9.891+04	6.366+01	4.3
11p <sub>3/2</sub>	4.372+01	1.551+04	4.364-01	3.334+02	5.712+00	1.212+05	5.387+01	5.0
12p <sub>3/2</sub>	3.615+01	1.225+04	6.447-01	1.859+02	5.578+00	1.212+05	3.056+01	5.2
4d <sub>3/2</sub>	4.345+02	2.523+04	1.517+02	6.970+00	8.049+00	4.523+01	2.879-01	0.5
5d <sub>3/2</sub>	2.402+02	1.982+04	7.380+01	3.604+00	9.041+00	6.527+01	7.852-01	0.3
6d <sub>3/2</sub>	1.566+02	1.562+04	1.301+01	3.560+00	9.775+00	2.899+02	8.550-01	0.3
7d <sub>3/2</sub>	1.106+02	1.557+04	1.552+01	2.534+00	9.433+00	2.892+02	2.522+00	0.6
8d <sub>3/2</sub>	8.227+01	1.230+04	1.806+00	7.329+00	9.479+00	2.516+03	1.683+01	0.9
9d <sub>3/2</sub>	6.363+01	1.228+04	2.048+00	6.671+00	9.267+00	2.512+03	1.491+01	1.4
10d <sub>3/2</sub>	5.069+01	9.697+03	4.273-01	2.706+01	9.110+00	1.349+04	6.425+01	1.7
11d <sub>3/2</sub>	4.134+01	9.687+03	4.723-01	2.634+01	8.962+00	1.350+04	5.409+01	2.5
12d <sub>3/2</sub>	3.435+01	7.653+03	5.436-01	2.579+01	8.793+00	1.350+04	4.233+01	2.9
4d <sub>5/2</sub>	4.316+02	2.522+04	1.430+02	7.793+00	8.230+00	4.099+01	3.074-01	0.4
5d <sub>5/2</sub>	2.391+02	1.982+04	5.412+01	4.245+00	9.391+00	7.329+01	6.933-01	0.3
6d <sub>5/2</sub>	1.561+02	1.562+04	1.068+01	3.996+00	9.826+00	3.309+02	1.412+00	0.2
7d <sub>5/2</sub>	1.102+02	1.557+04	1.277+01	2.941+00	9.479+00	3.297+02	3.008+00	0.8
8d <sub>5/2</sub>	8.206+01	1.230+04	1.563+01	2.213+00	9.117+00	3.292+02	2.559+00	1.6
9d <sub>5/2</sub>	6.349+01	9.709+03	1.193+00	1.190+01	9.231+00	4.251+03	2.485+01	1.5
10d <sub>5/2</sub>	5.059+01	9.697+03	4.149-01	3.217+01	9.073+00	1.356+04	6.594+01	2.1
11d <sub>5/2</sub>	4.126+01	7.659+03	4.836-01	3.279+01	8.878+00	1.356+04	5.097+01	2.4
12d <sub>5/2</sub>	3.430+01	7.652+03	5.452-01	3.108+01	8.730+00	1.357+04	4.121+01	2.9
4f <sub>5/2</sub>	3.298+02	7.948+03	3.075+01	3.061+02	8.492+00	1.704+02	4.922-01	0.5
5f <sub>5/2</sub>	2.007+02	6.217+03	4.891+01	3.250+01	9.267+00	8.147+01	1.034+00	0.2
6f <sub>5/2</sub>	1.362+02	6.153+03	1.372+01	5.780+01	1.032+01	2.029+02	9.744-02	0.2
7f <sub>5/2</sub>	9.855+01	4.850+03	1.432+01	3.054+01	1.034+01	2.025+02	1.527+00	0.3
8f <sub>5/2</sub>	7.459+01	4.826+03	1.578+01	1.836+01	1.021+01	2.021+02	1.582+00	0.6
9f <sub>5/2</sub>	5.841+01	3.811+03	3.049-01	7.453+02	1.070+01	8.799+03	1.255+01	0.4
10f <sub>5/2</sub>	4.697+01	3.800+03	3.141-01	5.453+02	1.067+01	8.770+03	3.117+01	0.5
11f <sub>5/2</sub>	3.860+01	3.792+03	3.320-01	4.486+02	1.059+01	8.770+03	3.119+01	0.7
12f <sub>5/2</sub>	3.228+01	2.996+03	3.482-01	3.740+02	1.052+01	8.770+03	2.982+01	1.1
4f <sub>7/2</sub>	3.294+02	7.948+03	3.655+01	2.226+02	8.420+00	1.452+02	9.622-01	0.5
5f <sub>7/2</sub>	2.005+02	6.217+03	1.946+01	9.528+01	1.001+01	1.467+02	9.939-02	0.3
6f <sub>7/2</sub>	1.361+02	6.153+03	1.943+01	4.120+01	1.020+01	1.471+02	1.170+00	0.2
7f <sub>7/2</sub>	9.849+01	4.850+03	6.561+00	6.171+01	1.061+01	3.891+02	1.125+00	0.2
8f <sub>7/2</sub>	7.454+01	4.826+03	7.231+00	3.672+01	1.055+01	3.756+02	2.318+00	0.4
9f <sub>7/2</sub>	5.838+01	3.811+03	7.907+00	2.470+01	1.042+01	3.759+02	2.326+00	0.7
10f <sub>7/2</sub>	4.695+01	3.800+03	8.707+00	1.745+01	1.027+01	3.762+02	2.122+00	1.1
11f <sub>7/2</sub>	3.858+01	3.792+03	9.586+00	1.273+01	1.012+01	3.762+02	1.879+00	1.4
12f <sub>7/2</sub>	3.226+01	2.996+03	2.016+00	5.217+01	1.040+01	1.611+03	5.845+00	0.9
5g <sub>7/2</sub>	1.798+02	3.144+03	1.445+01	8.884+02	9.540+00	1.676+02	3.206+00	0.9
6g <sub>7/2</sub>	1.252+02	2.466+03	1.129+01	5.727+02	1.045+01	1.679+02	7.994-01	0.3
7g <sub>7/2</sub>	9.190+01	2.433+03	9.950+00	3.090+02	1.099+01	1.674+02	7.146-03	0.3
8g <sub>7/2</sub>	7.026+01	1.919+03	9.377+00	1.784+02	1.130+01	1.672+02	1.003+00	0.2
9g <sub>7/2</sub>	5.543+01	1.904+03	9.139+00	1.120+02	1.146+01	1.675+02	1.379+00	0.2
10g <sub>7/2</sub>	4.483+01	1.505+03	9.427+00	7.316+01	1.148+01	1.675+02	1.453+00	0.2
11g <sub>7/2</sub>	3.701+01	1.497+03	9.977+00	4.982+01	1.141+01	1.675+02	1.398+00	0.3
12g <sub>7/2</sub>	3.106+01	1.491+03	4.245+00	1.008+02	1.190+01	3.290+02	2.335+00	0.1
5g <sub>9/2</sub>	1.798+02	3.144+03	1.386+01	9.848+02	9.556+00	1.726+02	3.313+00	0.8
6g <sub>9/2</sub>	1.252+02	2.466+03	1.086+01	6.182+02	1.047+01	1.727+02	6.607-01	0.3
7g <sub>9/2</sub>	9.189+01	2.433+03	9.002+00	3.423+02	1.114+01	1.732+02	9.652-01	0.3
8g <sub>9/2</sub>	7.025+01	1.919+03	8.918+00	1.921+02	1.132+01	1.735+02	9.324-01	0.2

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
9g <sub>9/2</sub>	5.542+01	1.904+03	8.637+00	1.206+02	1.150+01	1.741+02	1.394+00	0.2
10g <sub>9/2</sub>	4.483+01	1.505+03	8.887+00	7.883+01	1.152+01	1.741+02	1.490+00	0.2
11g <sub>9/2</sub>	3.700+01	1.497+03	9.326+00	5.408+01	1.147+01	1.745+02	1.454+00	0.3
12g <sub>9/2</sub>	3.106+01	1.491+03	3.925+00	1.105+02	1.193+01	3.504+02	2.451+00	0.2
6h <sub>9/2</sub>	1.227+02	1.276+03	2.150+01	3.759+02	8.500+00	2.696+02	6.307+02	0.6
7h <sub>9/2</sub>	9.018+01	1.243+03	4.269+01	2.085+01	8.469+00	1.730+02	6.162+01	0.8
8h <sub>9/2</sub>	6.906+01	1.222+03	4.122+01	1.548+01	8.810+00	1.732+02	5.541+01	1.5
9h <sub>9/2</sub>	5.457+01	9.654+02	2.563+01	4.607+01	1.085+01	7.444+01	6.917+01	0.3
10h <sub>9/2</sub>	4.420+01	9.550+02	2.095+01	5.054+01	1.148+01	7.319+01	7.338+01	0.4
11h <sub>9/2</sub>	3.653+01	9.473+02	1.574+01	6.387+01	1.229+01	7.181+01	8.491+01	0.6
12h <sub>9/2</sub>	3.069+01	7.500+02	1.116+01	8.065+01	1.305+01	7.783+01	1.038+00	0.7
6h <sub>11/2</sub>	1.226+02	1.276+03	2.980+01	1.072+02	8.524+00	1.714+02	1.002+00	0.7
7h <sub>11/2</sub>	9.018+01	1.243+03	4.312+01	2.016+01	8.450+00	1.730+02	6.165+01	0.8
8h <sub>11/2</sub>	6.906+01	1.222+03	4.118+01	1.553+01	8.808+00	1.731+02	5.536+01	1.5
9h <sub>11/2</sub>	5.457+01	9.653+02	2.523+01	4.813+01	1.090+01	7.345+01	6.958+01	0.4
10h <sub>11/2</sub>	4.420+01	9.550+02	2.014+01	5.587+01	1.165+01	6.975+01	7.586+01	0.5
11h <sub>11/2</sub>	3.653+01	9.473+02	1.542+01	6.699+01	1.241+01	6.917+01	8.741+01	0.8
12h <sub>11/2</sub>	3.069+01	7.500+02	1.117+01	8.073+01	1.305+01	7.774+01	1.035+00	0.7
7i <sub>11/2</sub>	8.999+01	8.093+02	4.327+01	1.323+01	8.127+00	1.686+02	5.641+01	0.6
8i <sub>11/2</sub>	6.890+01	7.882+02	4.545+01	9.307+00	8.536+00	1.663+02	4.753+01	0.7
9i <sub>11/2</sub>	5.444+01	6.225+02	2.524+01	1.216+02	1.263+01	2.871+01	6.669+01	0.8
10i <sub>11/2</sub>	4.410+01	6.122+02	2.141+01	1.411+02	1.352+01	2.797+01	6.969+01	0.7
11i <sub>11/2</sub>	3.645+01	6.045+02	1.658+01	1.905+02	1.461+01	2.807+01	7.948+01	0.8
12i <sub>11/2</sub>	3.063+01	4.793+02	1.027+01	3.143+02	1.624+01	3.092+01	1.124+00	0.5
7i <sub>13/2</sub>	8.998+01	8.093+02	4.328+01	1.321+01	8.124+00	1.690+02	5.631+01	0.6
8i <sub>13/2</sub>	6.890+01	7.882+02	4.552+01	9.210+00	8.523+00	1.689+02	4.749+01	0.7
9i <sub>13/2</sub>	5.444+01	6.225+02	2.549+01	1.166+02	1.257+01	2.905+01	6.625+01	0.8
10i <sub>13/2</sub>	4.410+01	6.122+02	2.190+01	1.295+02	1.338+01	2.868+01	6.829+01	0.7
11i <sub>13/2</sub>	3.644+01	6.045+02	1.618+01	2.013+02	1.470+01	2.812+01	8.058+01	0.8
12i <sub>13/2</sub>	3.062+01	4.793+02	7.980+00	3.959+02	1.671+01	3.585+01	1.333+00	0.5
Xe <sup>25+</sup>								
4s <sub>1/2</sub>	8.570+02	5.118+04	1.586+01	1.362+01	4.126+00	2.510+03	8.992+00	0.4
5s <sub>1/2</sub>	4.996+02	5.083+04	3.268+01	4.480+00	3.660+00	2.508+03	4.601+00	1.3
6s <sub>1/2</sub>	3.279+02	5.065+04	2.459+01	1.958+04	3.435+00	6.300+05	3.475+02	2.3
7s <sub>1/2</sub>	2.318+02	5.056+04	5.610+02	3.079+05	3.300+00	4.310+06	7.862+01	2.9
8s <sub>1/2</sub>	1.725+02	5.050+04	5.291+01	3.704+03	3.257+00	5.100+05	6.502+01	3.0
9s <sub>1/2</sub>	1.334+02	3.988+04	9.642+01	1.117+03	3.157+00	5.100+05	2.604+01	3.1
10s <sub>1/2</sub>	1.063+02	3.150+04	2.027+00	2.372+02	3.075+00	5.100+05	1.080+01	2.9
11s <sub>1/2</sub>	8.664+01	2.488+04	3.424+00	7.096+01	3.026+00	5.100+05	6.826+00	2.6
12s <sub>1/2</sub>	7.199+01	2.486+04	3.410+00	5.746+01	3.008+00	5.100+05	6.546+00	2.9
4p <sub>1/2</sub>	8.039+02	5.113+04	1.514+00	2.863+01	7.434+00	6.751+03	4.381+00	1.2
5p <sub>1/2</sub>	4.748+02	5.080+04	2.345+00	4.699+01	6.757+00	6.777+03	3.400+01	0.6
6p <sub>1/2</sub>	3.144+02	5.064+04	3.036+00	4.106+01	6.427+00	6.768+03	2.860+01	1.0
7p <sub>1/2</sub>	2.237+02	3.997+04	3.853+00	3.179+01	6.173+00	6.762+03	1.944+01	1.7
8p <sub>1/2</sub>	1.673+02	3.156+04	1.935+00	8.724+01	5.982+00	1.690+04	3.064+01	2.2
9p <sub>1/2</sub>	1.298+02	2.492+04	2.503+00	6.081+01	5.804+00	1.689+04	1.952+01	2.6
10p <sub>1/2</sub>	1.037+02	2.490+04	5.940+00	1.455+01	5.661+00	8.740+03	7.666+00	3.2
11p <sub>1/2</sub>	8.474+01	1.967+04	8.016+00	8.365+00	5.512+00	8.743+03	5.066+00	3.3
12p <sub>1/2</sub>	7.055+01	1.965+04	9.150+00	5.822+00	5.434+00	8.746+03	4.111+00	3.8
4p <sub>3/2</sub>	7.854+02	5.111+04	1.356+00	6.022+01	7.272+00	6.751+03	5.595+00	0.6
5p <sub>3/2</sub>	4.665+02	5.079+04	1.879+00	7.491+01	6.752+00	6.798+03	6.160+01	0.7
6p <sub>3/2</sub>	3.099+02	4.006+04	2.494+00	7.159+01	6.377+00	6.832+03	3.848+01	1.3
7p <sub>3/2</sub>	2.210+02	3.161+04	3.299+00	5.651+01	6.087+00	6.827+03	2.271+01	1.9
8p <sub>3/2</sub>	1.655+02	3.156+04	1.612+00	1.613+02	5.914+00	1.690+04	3.677+01	2.5
9p <sub>3/2</sub>	1.287+02	2.492+04	2.073+00	1.140+02	5.735+00	1.692+04	2.290+01	2.8
10p <sub>3/2</sub>	1.029+02	1.968+04	5.462+00	2.359+01	5.552+00	8.747+03	7.680+00	3.0
11p <sub>3/2</sub>	8.412+01	1.966+04	6.492+00	1.560+01	5.451+00	8.749+03	5.803+00	3.4
12p <sub>3/2</sub>	7.007+01	1.553+04	8.542+00	8.889+00	5.329+00	8.750+03	4.051+00	3.3
4d <sub>3/2</sub>	6.993+02	3.209+04	1.786+02	7.046+00	7.917+00	4.233+01	9.631+01	0.8
5d <sub>3/2</sub>	4.268+02	2.522+04	1.372+01	1.934+01	9.235+00	3.546+02	3.651+02	0.5
6d <sub>3/2</sub>	2.883+02	1.987+04	1.633+01	1.190+01	8.934+00	3.549+02	3.727+00	0.6
7d <sub>3/2</sub>	2.079+02	1.567+04	1.949+01	7.814+00	8.643+00	3.548+02	3.376+00	1.0
8d <sub>3/2</sub>	1.570+02	1.562+04	2.305+01	5.283+00	8.377+00	3.551+02	2.754+00	1.5
9d <sub>3/2</sub>	1.228+02	1.234+04	5.927+01	2.859+02	8.495+00	1.362+04	6.559+01	1.4
10d <sub>3/2</sub>	9.868+01	1.231+04	6.481+01	2.519+02	8.372+00	1.363+04	5.558+01	1.7
11d <sub>3/2</sub>	8.102+01	9.727+03	7.499+01	2.261+02	8.211+00	1.361+04	4.160+01	1.7
12d <sub>3/2</sub>	6.771+01	9.714+03	8.368+01	1.937+02	8.096+00	1.360+04	3.329+01	2.0
4d <sub>5/2</sub>	6.956+02	3.209+04	1.566+02	8.532+00	8.240+00	3.866+01	1.072+00	0.7
5d <sub>5/2</sub>	4.250+02	2.522+04	1.429+01	1.925+01	9.266+00	3.179+02	9.272+01	0.5
6d <sub>5/2</sub>	2.873+02	1.987+04	1.655+01	1.162+01	8.996+00	3.216+02	4.131+00	0.7
7d <sub>5/2</sub>	2.073+02	1.567+04	4.246+01	3.208+02	8.913+00	1.366+04	1.130+02	1.0
8d <sub>5/2</sub>	1.567+02	1.562+04	4.795+01	3.105+02	8.720+00	1.364+04	9.634+01	1.3
9d <sub>5/2</sub>	1.225+02	1.234+04	5.535+01	3.053+02	8.518+00	1.364+04	7.331+01	1.5

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
10d <sub>5/2</sub>	9.848+01	1.231+04	6.168–01	2.763+02	8.375+00	1.360+04	5.910+01	1.8
11d <sub>5/2</sub>	8.087+01	9.727+03	7.173–01	2.499+02	8.209+00	1.356+04	4.366+01	1.9
12d <sub>5/2</sub>	6.760+01	9.714+03	7.856–01	2.159+02	8.104+00	1.356+04	3.581+01	2.2
4f <sub>5/2</sub>	6.041+02	1.282+04	3.699+01	1.641+02	9.604+00	8.963+01	6.465+00	0.5
5f <sub>5/2</sub>	3.851+02	1.003+04	4.694+01	5.625+01	9.369+00	9.256+01	1.954+00	0.8
6f <sub>5/2</sub>	2.659+02	7.884+03	5.428+01	2.290+01	9.280+00	9.288+01	1.351+00	0.8
7f <sub>5/2</sub>	1.944+02	7.813+03	8.645+00	1.256+02	1.007+01	4.486+02	1.823–01	0.6
8f <sub>5/2</sub>	1.483+02	6.165+03	9.000+00	7.400+01	1.007+01	4.501+02	2.671+00	0.4
9f <sub>5/2</sub>	1.168+02	6.133+03	9.335+00	4.834+01	1.005+01	4.502+02	3.090+00	0.4
10f <sub>5/2</sub>	9.434+01	4.846+03	9.877+00	3.349+01	9.982+00	4.499+02	3.019+00	0.3
11f <sub>5/2</sub>	7.779+01	4.830+03	1.087+01	2.400+01	9.848+00	4.497+02	2.618+00	0.5
12f <sub>5/2</sub>	6.525+01	4.817+03	1.200+01	1.747+01	9.709+00	4.506+02	2.266+00	0.6
4f <sub>7/2</sub>	6.035+02	1.282+04	3.655+01	1.678+02	9.648+00	8.710+01	6.552+00	0.5
5f <sub>7/2</sub>	3.848+02	1.003+04	3.986+01	7.137+01	9.467+00	1.029+02	2.128+00	0.8
6f <sub>7/2</sub>	2.657+02	7.884+03	4.497+01	2.972+01	9.426+00	1.035+02	1.443+00	0.8
7f <sub>7/2</sub>	1.943+02	7.812+03	8.165+00	1.342+02	1.010+01	4.614+02	3.437–01	0.6
8f <sub>7/2</sub>	1.482+02	6.165+03	8.609+00	7.852+01	1.008+01	4.597+02	2.720+00	0.4
9f <sub>7/2</sub>	1.167+02	6.133+03	8.899+00	5.122+01	1.007+01	4.596+02	3.216+00	0.4
10f <sub>7/2</sub>	9.428+01	4.846+03	9.434+00	3.554+01	9.999+00	4.594+02	3.126+00	0.3
11f <sub>7/2</sub>	7.775+01	4.830+03	1.038+01	2.552+01	9.866+00	4.590+02	2.709+00	0.5
12f <sub>7/2</sub>	6.522+01	4.817+03	1.116+01	1.896+01	9.763+00	4.589+02	2.425+00	0.8
5g <sub>7/2</sub>	3.693+02	5.121+03	7.123+01	7.311+01	6.897+00	3.699+02	7.549–01	0.5
6g <sub>7/2</sub>	2.567+02	4.010+03	1.292+02	5.475+00	6.734+00	3.695+02	6.107–01	0.6
7g <sub>7/2</sub>	1.886+02	3.942+03	8.666+01	1.091+01	8.275+00	1.228+02	6.700–01	0.3
8g <sub>7/2</sub>	1.444+02	3.108+03	7.440+01	9.862+00	8.697+00	1.226+02	6.628–01	0.6
9g <sub>7/2</sub>	1.141+02	3.078+03	4.732+01	1.748+01	9.992+00	8.985+01	8.353–01	0.7
10g <sub>7/2</sub>	9.236+01	3.056+03	3.483+01	2.029+01	1.057+01	9.669+01	9.624–01	0.8
11g <sub>7/2</sub>	7.631+01	2.417+03	2.172+01	2.822+01	1.127+01	1.157+02	1.269+00	0.7
12g <sub>7/2</sub>	6.411+01	2.405+03	1.499+01	3.283+01	1.160+01	1.503+02	1.581+00	0.8
5g <sub>9/2</sub>	3.692+02	5.121+03	9.093+01	2.856+01	7.250+00	1.653+02	1.260+00	1.2
6g <sub>9/2</sub>	2.566+02	4.010+03	9.280+01	1.561+01	7.675+00	1.571+02	6.775–01	0.3
7g <sub>9/2</sub>	1.886+02	3.942+03	9.711+01	7.904+00	7.873+00	1.572+02	6.253–01	0.5
8g <sub>9/2</sub>	1.444+02	3.108+03	8.124+01	7.779+00	8.322+00	1.571+02	6.162–01	1.1
9g <sub>9/2</sub>	1.140+02	3.078+03	4.692+01	1.783+01	1.002+01	8.852+01	8.407–01	0.6
10g <sub>9/2</sub>	9.234+01	3.056+03	3.409+01	2.105+01	1.061+01	9.595+01	9.752–01	0.8
11g <sub>9/2</sub>	7.630+01	2.417+03	2.175+01	2.823+01	1.128+01	1.142+02	1.272+00	0.7
12g <sub>9/2</sub>	6.410+01	2.405+03	1.477+01	3.338+01	1.162+01	1.502+02	1.601+00	0.8
6h <sub>9/2</sub>	2.556+02	2.597+03	1.159+02	6.710+00	6.940+00	1.657+02	6.080–01	0.6
7h <sub>9/2</sub>	1.878+02	2.529+03	9.999+01	1.002+01	8.437+00	6.805+01	5.706–01	0.6
8h <sub>9/2</sub>	1.438+02	1.993+03	7.118+01	2.583+01	1.045+01	3.574+01	6.433–01	0.5
9h <sub>9/2</sub>	1.136+02	1.962+03	4.922+01	4.972+01	1.210+01	3.006+01	7.750–01	0.6
10h <sub>9/2</sub>	9.204+01	1.552+03	3.163+01	8.157+01	1.368+01	3.003+01	1.051+00	0.4
11h <sub>9/2</sub>	7.607+01	1.536+03	1.667+01	1.028+02	1.476+01	4.545+01	1.620+00	0.5
12h <sub>9/2</sub>	6.392+01	1.524+03	7.511+00	1.070+02	1.544+01	8.921+01	3.052+00	0.5
6h <sub>11/2</sub>	2.556+02	2.596+03	1.168+02	6.481+00	6.912+00	1.691+02	6.058–01	0.5
7h <sub>11/2</sub>	1.878+02	2.529+03	1.190+02	4.387+00	7.351+00	1.699+02	4.959–01	0.9
8h <sub>11/2</sub>	1.438+02	1.993+03	7.137+01	2.560+01	1.045+01	3.568+01	6.446–01	0.5
9h <sub>11/2</sub>	1.136+02	1.962+03	4.834+01	5.264+01	1.220+01	2.945+01	7.881–01	0.7
10h <sub>11/2</sub>	9.203+01	1.552+03	2.653+01	1.050+02	1.422+01	3.058+01	1.239+00	0.6
11h <sub>11/2</sub>	7.606+01	1.536+03	2.295+01	7.977+01	1.425+01	3.752+01	1.263+00	0.4
12h <sub>11/2</sub>	6.391+01	1.524+03	1.106+01	9.157+01	1.519+01	6.395+01	2.219+00	0.5
7i <sub>11/2</sub>	1.878+02	1.648+03	8.409+01	1.904+01	9.712+00	3.040+01	6.337–01	0.5
8i <sub>11/2</sub>	1.438+02	1.297+03	8.543+01	1.539+01	1.027+01	3.067+01	5.400–01	0.9
9i <sub>11/2</sub>	1.136+02	1.267+03	3.070+01	5.836+02	1.624+01	1.526+01	1.104+00	0.1
10i <sub>11/2</sub>	9.201+01	1.245+03	3.389+01	3.036+02	1.607+01	1.558+01	9.728–01	0.3
11i <sub>11/2</sub>	7.604+01	1.229+03	1.630+01	4.033+02	1.814+01	2.299+01	1.762+00	0.2
12i <sub>11/2</sub>	6.389+01	9.747+02	1.834+01	2.530+02	1.768+01	2.342+01	1.466+00	0.4
7i <sub>13/2</sub>	1.877+02	1.648+03	6.024+01	7.814+01	1.060+01	3.026+01	5.716–01	0.7
8i <sub>13/2</sub>	1.437+02	1.297+03	8.514+01	1.572+01	1.030+01	3.036+01	5.413–01	0.9
9i <sub>13/2</sub>	1.136+02	1.267+03	6.791+01	3.089+00	1.652+01	1.601+01	1.184+00	0.1
10i <sub>13/2</sub>	9.200+01	1.245+03	2.909+01	4.110+02	1.670+01	1.586+01	1.119+00	0.2
11i <sub>13/2</sub>	7.603+01	1.229+03	1.474+01	4.085+02	1.832+01	2.465+01	1.935+00	0.1
12i <sub>13/2</sub>	6.389+01	9.747+02	1.497+01	2.832+02	1.843+01	2.455+01	1.896+00	0.3
Xe <sup>35+</sup>								
4s <sub>1/2</sub>	1.367+03	5.169+04	9.550–02	9.083+04	3.903+00	5.080+05	4.557–01	0.2
5s <sub>1/2</sub>	8.335+02	5.116+04	1.745–01	8.101+04	3.538+00	5.080+05	5.442–01	0.7
6s <sub>1/2</sub>	5.619+02	5.089+04	2.751–01	4.602+04	3.338+00	5.080+05	1.214+00	1.1
7s <sub>1/2</sub>	4.044+02	5.073+04	4.003–01	2.316+04	3.210+00	5.080+05	1.522+00	1.5
8s <sub>1/2</sub>	3.050+02	5.063+04	4.434+00	1.841+02	3.163+00	5.086+04	1.438+01	1.6
9s <sub>1/2</sub>	2.382+02	5.057+04	5.828+00	9.057+01	3.089+00	5.087+04	9.769+00	1.9
10s <sub>1/2</sub>	1.912+02	5.052+04	7.741–01	3.792+03	3.053+00	4.609+05	4.819+01	2.1
11s <sub>1/2</sub>	1.568+02	3.990+04	1.221+00	1.388+03	2.989+00	4.609+05	2.472+01	2.0
12s <sub>1/2</sub>	1.309+02	3.152+04	2.163+00	3.923+02	2.930+00	4.609+05	1.244+01	1.9
4p <sub>1/2</sub>	1.316+03	5.164+04	3.080+02	1.242+00	5.590+00	1.037+02	1.227+00	0.3
5p <sub>1/2</sub>	8.086+02	5.114+04	4.379+01	6.468+00	6.131+00	5.390+02	3.549+00	0.4

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$6p_{1/2}$	5.479+02	5.087+04	5.581+01	3.425+00	5.855+00	5.397+02	3.132+00	0.5
$7p_{1/2}$	3.958+02	5.072+04	7.098+01	1.871+00	5.602+00	5.398+02	2.359+00	1.0
$8p_{1/2}$	2.993+02	4.005+04	3.296–02	2.253+05	5.773+00	1.054+06	2.516+03	0.9
$9p_{1/2}$	2.342+02	3.998+04	3.310–02	1.808+05	5.745+00	1.054+06	2.516+03	1.1
$10p_{1/2}$	1.883+02	3.158+04	4.541–02	1.910+05	5.537+00	1.053+06	1.243+03	1.6
$11p_{1/2}$	1.547+02	2.495+04	4.523–02	1.543+05	5.524+00	1.053+06	1.243+03	1.4
$12p_{1/2}$	1.293+02	2.492+04	4.335–02	1.316+05	5.523+00	1.053+06	1.243+03	1.8
$4p_{3/2}$	1.288+03	5.161+04	3.046+02	1.457+00	5.677+00	7.282+01	1.388+00	0.3
$5p_{3/2}$	7.953+02	5.112+04	3.090+01	1.131+01	6.209+00	5.673+02	5.786+00	0.3
$6p_{3/2}$	5.404+02	5.087+04	3.885+01	6.371+00	5.928+00	5.692+02	4.478+00	0.6
$7p_{3/2}$	3.912+02	5.072+04	4.904+01	3.635+00	5.671+00	5.704+02	3.181+00	1.1
$8p_{3/2}$	2.963+02	4.004+04	2.902–02	5.102+05	5.670+00	1.054+06	2.516+03	1.6
$9p_{3/2}$	2.321+02	3.162+04	2.989–02	4.011+05	5.635+00	1.054+06	2.516+03	1.3
$10p_{3/2}$	1.868+02	2.498+04	2.915–02	3.182+05	5.630+00	1.054+06	2.516+03	1.4
$11p_{3/2}$	1.536+02	2.495+04	4.341–02	3.292+05	5.393+00	1.052+06	1.082+03	1.9
$12p_{3/2}$	1.285+02	1.971+04	4.292–02	2.670+05	5.388+00	1.052+06	1.082+03	1.6
$3d_{3/2}$	2.303+03	5.263+04	7.280+02	3.472+00	4.254+00	1.389+02	8.638–01	0.4
$4d_{3/2}$	1.214+03	4.096+04	4.551+02	2.758+00	6.048+00	5.082+01	8.379–01	0.6
$5d_{3/2}$	7.599+02	3.215+04	1.677+02	5.272+00	7.639+00	6.226+01	1.325+00	0.5
$6d_{3/2}$	5.207+02	2.531+04	3.228+01	1.544+01	8.451+00	2.383+02	3.763+00	0.3
$7d_{3/2}$	3.791+02	2.517+04	3.698+01	9.176+00	8.247+00	2.382+02	3.287+00	0.4
$8d_{3/2}$	2.883+02	1.987+04	4.326+01	5.795+00	8.004+00	2.389+02	2.618+00	0.8
$9d_{3/2}$	2.266+02	1.569+04	1.098+00	4.784+02	8.233+00	8.714+03	6.368+01	0.7
$10d_{3/2}$	1.828+02	1.565+04	1.213+00	4.111+02	8.101+00	8.714+03	5.025+01	1.0
$11d_{3/2}$	1.506+02	1.236+04	1.374+00	3.523+02	7.957+00	8.703+03	3.781+01	1.2
$12d_{3/2}$	1.262+02	1.234+04	1.506+00	2.940+02	7.855+00	8.686+03	3.036+01	1.4
$3d_{5/2}$	2.285+03	5.261+04	8.057+02	2.693+00	4.120+00	1.186+02	8.396–01	0.2
$4d_{5/2}$	1.207+03	4.095+04	3.973+02	3.793+00	6.396+00	4.124+01	8.879–01	0.5
$5d_{5/2}$	7.568+02	3.215+04	1.444+02	6.424+00	7.931+00	5.776+01	1.508+00	0.5
$6d_{5/2}$	5.190+02	2.531+04	1.947+01	2.378+01	8.665+00	3.366+02	6.151+00	0.3
$7d_{5/2}$	3.780+02	2.517+04	2.212+01	1.503+01	8.461+00	3.372+02	5.232+00	0.4
$8d_{5/2}$	2.876+02	1.987+04	2.563+01	1.008+01	8.230+00	3.371+02	4.088+00	0.8
$9d_{5/2}$	2.261+02	1.569+04	3.088+01	6.750+00	7.960+00	3.374+02	3.025+00	1.1
$10d_{5/2}$	1.825+02	1.565+04	1.115+00	4.293+02	8.145+00	8.707+03	5.637+01	1.1
$11d_{5/2}$	1.503+02	1.236+04	1.274+00	3.779+02	7.986+00	8.708+03	4.145+01	1.3
$12d_{5/2}$	1.260+02	1.234+04	1.400+00	3.194+02	7.879+00	8.701+03	3.300+01	1.5
$4f_{5/2}$	1.141+03	2.072+04	3.016+02	1.237+01	6.697+00	4.396+01	1.033+00	0.5
$5f_{5/2}$	7.263+02	1.619+04	1.329+02	2.749+01	9.001+00	4.053+01	1.214+00	0.3
$6f_{5/2}$	5.023+02	1.272+04	1.588+02	9.626+00	8.881+00	4.043+01	1.037+00	0.5
$7f_{5/2}$	3.678+02	1.258+04	3.127+01	3.235+01	1.048+01	1.217+02	2.682+00	0.1
$8f_{5/2}$	2.809+02	9.927+03	3.395+01	1.898+01	1.039+01	1.216+02	2.544+00	0.3
$9f_{5/2}$	2.215+02	9.867+03	3.778+01	1.217+01	1.020+01	1.218+02	2.198+00	0.5
$10f_{5/2}$	1.791+02	7.797+03	1.005+00	3.935+02	1.067+01	4.004+03	5.282+01	0.3
$11f_{5/2}$	1.478+02	7.766+03	1.078+00	3.332+02	1.056+01	3.985+03	4.524+01	0.5
$12f_{5/2}$	1.241+02	7.742+03	1.147+00	2.878+02	1.046+01	3.977+03	3.889+01	0.8
$4f_{7/2}$	1.139+03	2.072+04	2.973+02	1.299+01	6.672+00	4.402+01	1.009+00	0.5
$5f_{7/2}$	7.252+02	1.619+04	1.401+02	2.573+01	9.011+00	3.704+01	1.237+00	0.2
$6f_{7/2}$	5.016+02	1.272+04	1.422+02	1.182+01	9.266+00	3.680+01	1.172+00	0.3
$7f_{7/2}$	3.674+02	1.258+04	2.771+01	3.555+01	1.058+01	1.301+02	3.025+00	0.1
$8f_{7/2}$	2.806+02	9.927+03	3.038+01	2.103+01	1.046+01	1.302+02	2.776+00	0.3
$9f_{7/2}$	2.213+02	9.867+03	3.340+01	1.363+01	1.030+01	1.302+02	2.442+00	0.5
$10f_{7/2}$	1.790+02	7.797+03	3.914+01	8.982+00	1.000+01	1.304+02	1.940+00	0.7
$11f_{7/2}$	1.477+02	7.766+03	1.273+01	2.161+01	1.035+01	3.603+02	4.468+00	0.7
$12f_{7/2}$	1.240+02	7.742+03	1.397+01	1.666+01	1.019+01	3.604+02	3.733+00	0.9
$5g_{7/2}$	7.087+02	8.327+03	1.588+02	2.973+01	8.242+00	5.003+01	1.272+00	0.4
$6g_{7/2}$	4.925+02	8.111+03	1.854+02	1.053+01	8.466+00	4.974+01	7.545–01	0.8
$7g_{7/2}$	3.619+02	6.379+03	1.056+02	2.346+01	1.038+01	4.091+01	9.483–01	0.1
$8g_{7/2}$	2.770+02	6.294+03	8.655+01	1.986+01	1.102+01	4.211+01	1.056+00	0.2
$9g_{7/2}$	2.188+02	4.971+03	4.458+01	2.886+01	1.194+01	6.429+01	1.497+00	0.1
$10g_{7/2}$	1.771+02	4.929+03	4.798+01	1.821+01	1.183+01	6.446+01	1.393+00	0.2
$11g_{7/2}$	1.464+02	4.898+03	1.271+01	4.152+01	1.270+01	1.919+02	3.681+00	0.2
$12g_{7/2}$	1.230+02	3.876+03	1.282+01	3.035+01	1.271+01	1.919+02	3.692+00	0.2
$5g_{9/2}$	7.082+02	8.326+03	2.001+02	1.479+01	7.772+00	5.036+01	1.072+00	0.4
$6g_{9/2}$	4.922+02	8.110+03	9.413+01	5.671+01	9.945+00	4.818+01	8.696–01	0.2
$7g_{9/2}$	3.617+02	6.378+03	7.381+01	4.402+01	1.091+01	4.801+01	9.996–01	0.1
$8g_{9/2}$	2.768+02	6.294+03	8.028+01	2.196+01	1.093+01	4.801+01	1.009+00	0.4
$9g_{9/2}$	2.187+02	4.971+03	6.787+01	1.807+01	1.147+01	4.837+01	1.174+00	0.2
$10g_{9/2}$	1.771+02	4.929+03	2.789+01	3.030+01	1.236+01	9.312+01	2.039+00	0.1
$11g_{9/2}$	1.463+02	4.898+03	2.780+01	2.138+01	1.242+01	9.313+01	2.091+00	0.3
$12g_{9/2}$	1.229+02	3.876+03	4.067+00	8.212+01	1.290+01	5.730+02	9.933+00	0.1
$6h_{9/2}$	4.903+02	5.242+03	1.669+02	1.319+01	8.238+00	6.315+01	7.139–01	0.3
$7h_{9/2}$	3.603+02	4.113+03	1.975+02	4.964+00	8.474+00	6.174+01	5.685–01	0.5
$8h_{9/2}$	2.759+02	4.029+03	9.949+01	3.709+01	1.183+01	2.832+01	7.809–01	0.4
$9h_{9/2}$	2.180+02	3.971+03	9.874+01	2.455+01	1.211+01	2.828+01	7.704–01	0.3

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
10h <sub>9/2</sub>	1.766+02	3.141+03	6.446+01	4.046+01	1.371+01	2.775+01	1.041+00	0.4
11h <sub>9/2</sub>	1.459+02	3.110+03	3.028+01	5.473+01	1.486+01	4.720+01	1.706+00	0.3
12h <sub>9/2</sub>	1.226+02	3.087+03	1.791+01	5.041+01	1.532+01	7.404+01	2.567+00	0.3
6h <sub>11/2</sub>	4.902+02	5.242+03	1.715+02	1.188+01	8.184+00	6.274+01	7.149–01	0.2
7h <sub>11/2</sub>	3.602+02	4.113+03	1.996+02	4.752+00	8.419+00	6.303+01	5.640–01	0.5
8h <sub>11/2</sub>	2.758+02	4.029+03	8.846+01	4.903+01	1.212+01	2.890+01	7.992–01	0.4
9h <sub>11/2</sub>	2.179+02	3.971+03	8.675+01	3.248+01	1.247+01	2.877+01	8.252–01	0.4
10h <sub>11/2</sub>	1.765+02	3.141+03	6.250+01	4.182+01	1.374+01	2.849+01	1.055+00	0.3
11h <sub>11/2</sub>	1.459+02	3.110+03	2.378+01	6.255+01	1.512+01	5.639+01	2.062+00	0.3
12h <sub>11/2</sub>	1.226+02	3.087+03	2.543+01	4.352+01	1.499+01	5.624+01	1.895+00	0.3
7i <sub>11/2</sub>	3.601+02	3.324+03	7.484+01	2.096+02	1.220+01	2.707+01	7.701–01	0.4
8i <sub>11/2</sub>	2.757+02	2.617+03	4.287+01	6.093+02	1.527+01	2.472+01	7.598–01	0.3
9i <sub>11/2</sub>	2.178+02	2.559+03	3.282+01	4.827+02	1.687+01	2.550+01	1.310+00	0.3
10i <sub>11/2</sub>	1.764+02	2.517+03	3.418+01	2.725+02	1.708+01	2.551+01	1.331+00	0.3
11i <sub>11/2</sub>	1.458+02	1.995+03	3.542+01	1.695+02	1.719+01	2.551+01	1.365+00	0.4
12i <sub>11/2</sub>	1.225+02	1.971+03	3.310+01	1.267+02	1.764+01	2.567+01	1.513+00	0.3
7i <sub>13/2</sub>	3.600+02	3.324+03	6.958+01	2.695+02	1.248+01	2.659+01	8.388–01	0.5
8i <sub>13/2</sub>	2.756+02	2.617+03	4.825+01	5.056+02	1.514+01	2.246+01	8.731–01	0.3
9i <sub>13/2</sub>	2.178+02	2.559+03	3.485+01	4.625+02	1.681+01	2.424+01	1.290+00	0.3
10i <sub>13/2</sub>	1.764+02	2.517+03	3.291+01	2.911+02	1.749+01	2.409+01	1.561+00	0.2
11i <sub>13/2</sub>	1.458+02	1.995+03	3.348+01	1.882+02	1.769+01	2.395+01	1.572+00	0.1
12i <sub>13/2</sub>	1.225+02	1.971+03	3.354+01	1.327+02	1.785+01	2.396+01	1.564+00	0.3
Xe <sup>43+</sup>								
3s <sub>1/2</sub>	3.336+03	5.366+04	6.693–01	3.722+03	4.266+00	4.853+04	9.421–01	0.1
4s <sub>1/2</sub>	1.814+03	5.214+04	1.287+00	4.248+03	3.695+00	4.853+04	7.022+00	0.2
5s <sub>1/2</sub>	1.139+03	5.147+04	2.012+00	2.428+03	3.421+00	4.853+04	7.020+00	0.4
6s <sub>1/2</sub>	7.807+02	5.111+04	2.896+00	1.190+03	3.253+00	4.853+04	7.051+00	0.6
7s <sub>1/2</sub>	5.683+02	5.090+04	3.571+00	6.438+02	3.167+00	4.854+04	1.872+01	0.7
8s <sub>1/2</sub>	4.321+02	5.076+04	3.464+00	5.523+02	3.098+00	6.096+04	1.886+01	0.8
9s <sub>1/2</sub>	3.396+02	5.067+04	4.367+00	2.925+02	3.033+00	6.096+04	1.339+01	1.0
10s <sub>1/2</sub>	2.739+02	5.060+04	5.301+00	1.640+02	2.983+00	6.096+04	1.044+01	1.2
11s <sub>1/2</sub>	2.256+02	5.055+04	6.376+00	9.408+01	2.941+00	6.096+04	8.218+00	1.4
12s <sub>1/2</sub>	1.890+02	3.994+04	9.182+00	3.893+01	2.884+00	6.095+04	5.618+00	1.3
3p <sub>1/2</sub>	3.236+03	5.356+04	3.751+02	3.568+00	5.288+00	1.030+02	2.441–01	0.4
4p <sub>1/2</sub>	1.773+03	5.210+04	4.384+02	1.071+00	5.155+00	1.043+02	1.254+00	0.3
5p <sub>1/2</sub>	1.118+03	5.144+04	1.102+02	3.695+00	5.636+00	3.157+02	2.141+00	0.2
6p <sub>1/2</sub>	7.687+02	5.110+04	1.407+02	1.709+00	5.384+00	3.162+02	1.913+00	0.3
7p <sub>1/2</sub>	5.609+02	5.089+04	1.477+01	3.342+01	5.657+00	2.482+03	8.395+00	0.2
8p <sub>1/2</sub>	4.272+02	5.075+04	1.679+01	2.183+01	5.541+00	2.483+03	6.943+00	0.4
9p <sub>1/2</sub>	3.361+02	4.008+04	1.939+01	1.424+01	5.426+00	2.481+03	5.478+00	0.7
10p <sub>1/2</sub>	2.714+02	4.002+04	2.224+01	9.434+00	5.324+00	2.481+03	4.394+00	1.0
11p <sub>1/2</sub>	2.237+02	3.162+04	2.638+01	6.029+00	5.214+00	2.479+03	3.431+00	1.3
12p <sub>1/2</sub>	1.875+02	3.158+04	2.999+01	4.095+00	5.130+00	2.480+03	2.841+00	1.5
3p <sub>3/2</sub>	3.149+03	5.348+04	1.576+02	1.090+01	6.080+00	1.041+02	9.960–01	0.4
4p <sub>3/2</sub>	1.738+03	5.206+04	2.502+02	2.610+00	5.541+00	1.038+02	1.630+00	0.1
5p <sub>3/2</sub>	1.100+03	5.143+04	4.461+01	1.390+01	5.872+00	5.024+02	4.249+00	0.1
6p <sub>3/2</sub>	7.586+02	5.109+04	5.332+01	7.410+00	5.676+00	5.020+02	3.843+00	0.3
7p <sub>3/2</sub>	5.545+02	5.088+04	6.454+01	4.133+00	5.479+00	5.015+02	3.001+00	0.6
8p <sub>3/2</sub>	4.229+02	5.075+04	7.689+01	2.424+00	5.303+00	5.017+02	2.349+00	1.0
9p <sub>3/2</sub>	3.332+02	4.008+04	1.465+01	2.609+01	5.434+00	2.482+03	7.216+00	0.9
10p <sub>3/2</sub>	2.692+02	3.166+04	1.746+01	1.676+01	5.308+00	2.481+03	5.335+00	1.1
11p <sub>3/2</sub>	2.221+02	3.161+04	1.995+01	1.131+01	5.214+00	2.482+03	4.247+00	1.4
12p <sub>3/2</sub>	1.863+02	2.498+04	2.413+01	7.060+00	5.100+00	2.482+03	3.257+00	1.5
3d <sub>3/2</sub>	3.021+03	5.335+04	7.988+02	3.141+00	4.218+00	1.390+02	9.871–01	0.2
4d <sub>3/2</sub>	1.689+03	5.202+04	8.260+02	9.218–01	4.548+00	1.388+02	6.944–01	0.8
5d <sub>3/2</sub>	1.076+03	4.082+04	1.300+02	1.111+01	7.342+00	1.057+02	7.651–01	0.6
6d <sub>3/2</sub>	7.452+02	3.214+04	1.224+02	5.857+00	7.549+00	1.050+02	1.634+00	0.4
7d <sub>3/2</sub>	5.462+02	3.194+04	1.378+02	3.108+00	7.394+00	1.051+02	1.512+00	0.4
8d <sub>3/2</sub>	4.175+02	2.521+04	2.789+00	2.759+02	8.225+00	3.507+03	3.867+01	0.4
9d <sub>3/2</sub>	3.294+02	1.991+04	3.094+00	2.243+02	8.073+00	3.522+03	2.957+01	0.3
10d <sub>3/2</sub>	2.665+02	1.985+04	3.349+00	1.760+02	7.972+00	3.513+03	2.464+01	0.4
11d <sub>3/2</sub>	2.200+02	1.568+04	3.677+00	1.413+02	7.858+00	3.511+03	1.969+01	0.6
12d <sub>3/2</sub>	1.847+02	1.565+04	3.999+00	1.134+02	7.760+00	3.512+03	1.608+01	0.8
3d <sub>5/2</sub>	3.001+03	5.333+04	1.010+03	1.667+00	3.872+00	1.399+02	8.995–01	0.2
4d <sub>5/2</sub>	1.681+03	5.201+04	8.758+02	8.121–01	4.370+00	1.391+02	6.660–01	1.2
5d <sub>5/2</sub>	1.072+03	4.082+04	1.057+02	1.450+01	7.603+00	1.036+02	8.037–01	0.6
6d <sub>5/2</sub>	7.427+02	3.213+04	1.210+02	6.295+00	7.495+00	1.030+02	1.493+00	0.5
7d <sub>5/2</sub>	5.446+02	2.534+04	1.144+02	3.941+00	7.626+00	1.030+02	1.748+00	0.3
8d <sub>5/2</sub>	4.164+02	2.521+04	4.813+01	7.770+00	7.882+00	2.271+02	2.886+00	0.4
9d <sub>5/2</sub>	3.286+02	1.991+04	4.011+00	1.418+02	8.133+00	2.464+03	2.415+01	0.3
10d <sub>5/2</sub>	2.659+02	1.985+04	4.356+00	1.119+02	8.018+00	2.468+03	1.986+01	0.5
11d <sub>5/2</sub>	2.196+02	1.568+04	4.824+00	8.949+01	7.890+00	2.466+03	1.562+01	0.7
12d <sub>5/2</sub>	1.844+02	1.565+04	5.244+00	7.172+01	7.787+00	2.468+03	1.274+01	1.0
4f <sub>5/2</sub>	1.655+03	2.645+04	5.245+02	3.868+00	5.228+00	1.027+02	8.638–01	0.3
5f <sub>5/2</sub>	1.059+03	2.064+04	5.566+02	1.463+00	5.591+00	1.023+02	6.270–01	0.8

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$6f_{5/2}$	7.355+02	1.620+04	2.168+02	8.020+00	8.483+00	4.041+01	9.500–01	0.3
$7f_{5/2}$	5.402+02	1.600+04	1.774+02	6.336+00	9.090+00	4.022+01	1.097+00	0.5
$8f_{5/2}$	4.134+02	1.263+04	5.780+01	1.404+01	1.026+01	8.474+01	2.188+00	0.3
$9f_{5/2}$	3.265+02	1.254+04	6.412+01	8.722+00	1.008+01	8.495+01	1.926+00	0.3
$10f_{5/2}$	2.644+02	9.910+03	7.301+00	4.821+01	1.073+01	6.121+02	1.197+01	0.2
$11f_{5/2}$	2.185+02	9.864+03	7.885+00	3.857+01	1.059+01	6.129+02	1.002+01	0.4
$12f_{5/2}$	1.835+02	9.830+03	8.506+00	3.123+01	1.045+01	6.126+02	8.452+00	0.6
$4f_{7/2}$	1.651+03	2.644+04	6.004+02	2.491+00	4.886+00	1.271+02	7.909–01	0.1
$5f_{7/2}$	1.058+03	2.064+04	3.163+02	7.453+00	7.260+00	4.401+01	7.866–01	0.3
$6f_{7/2}$	7.344+02	1.620+04	3.115+02	3.776+00	7.582+00	4.383+01	7.827–01	0.5
$7f_{7/2}$	5.395+02	1.600+04	1.425+02	8.736+00	9.400+00	4.371+01	1.232+00	0.3
$8f_{7/2}$	4.129+02	1.263+04	5.051+01	1.580+01	1.041+01	9.002+01	2.466+00	0.3
$9f_{7/2}$	3.262+02	1.254+04	5.565+01	9.954+00	1.024+01	9.012+01	2.180+00	0.3
$10f_{7/2}$	2.642+02	9.910+03	6.283+01	6.568+00	1.000+01	9.032+01	1.820+00	0.5
$11f_{7/2}$	2.183+02	9.864+03	3.424+00	8.806+01	1.069+01	1.331+03	2.273+01	0.4
$12f_{7/2}$	1.834+02	9.829+03	3.686+00	7.504+01	1.056+01	1.327+03	1.903+01	0.6
$5g_{7/2}$	1.056+03	1.327+04	1.205+02	1.946+02	8.784+00	5.421+01	2.682–01	0.6
$6g_{7/2}$	7.333+02	1.038+04	3.542+02	4.538+00	7.966+00	3.255+01	6.647–01	0.4
$7g_{7/2}$	5.388+02	1.018+04	1.387+02	3.033+01	1.137+01	2.419+01	1.074+00	0.3
$8g_{7/2}$	4.124+02	8.031+03	1.475+02	1.609+01	1.141+01	2.421+01	1.020+00	0.2
$9g_{7/2}$	3.258+02	7.944+03	6.420+01	2.404+01	1.292+01	3.851+01	1.861+00	0.2
$10g_{7/2}$	2.639+02	6.281+03	3.037+01	2.313+01	1.345+01	7.454+01	3.346+00	0.2
$11g_{7/2}$	2.181+02	6.235+03	3.483+01	1.680+01	1.310+01	7.436+01	2.637+00	0.4
$12g_{7/2}$	1.832+02	6.200+03	3.934+01	1.233+01	1.280+01	7.410+01	2.152+00	0.7
$5g_{9/2}$	1.055+03	1.327+04	2.032+02	4.567+01	7.906+00	4.763+01	4.596–01	0.3
$6g_{9/2}$	7.327+02	1.038+04	3.588+02	4.365+00	7.918+00	3.243+01	6.591–01	0.4
$7g_{9/2}$	5.384+02	1.018+04	1.430+02	2.958+01	1.137+01	2.311+01	1.075+00	0.3
$8g_{9/2}$	4.122+02	8.030+03	1.236+02	2.217+01	1.203+01	2.344+01	1.211+00	0.2
$9g_{9/2}$	3.257+02	7.944+03	4.091+01	3.071+01	1.330+01	5.487+01	2.635+00	0.2
$10g_{9/2}$	2.638+02	6.280+03	4.140+01	2.019+01	1.336+01	5.487+01	2.633+00	0.2
$11g_{9/2}$	2.180+02	6.235+03	2.638+01	1.923+01	1.328+01	9.304+01	3.371+00	0.4
$12g_{9/2}$	1.832+02	6.200+03	1.617+01	1.923+01	1.335+01	1.539+02	4.900+00	0.5
$6h_{9/2}$	7.326+02	6.749+03	4.075+02	1.411+00	6.924+00	6.718+01	5.761–01	0.7
$7h_{9/2}$	5.383+02	6.555+03	1.404+02	8.148+01	1.260+01	1.719+01	9.818–01	0.1
$8h_{9/2}$	4.121+02	5.164+03	1.409+02	4.704+01	1.299+01	1.764+01	9.078–01	0.4
$9h_{9/2}$	3.256+02	5.078+03	1.090+02	5.424+01	1.435+01	1.716+01	1.123+00	0.2
$10h_{9/2}$	2.638+02	5.016+03	2.849+01	6.201+01	1.629+01	4.718+01	3.251+00	0.1
$11h_{9/2}$	2.180+02	3.971+03	2.894+01	4.094+01	1.637+01	4.718+01	3.212+00	0.2
$12h_{9/2}$	1.831+02	3.936+03	3.443+01	3.118+01	1.571+01	4.805+01	2.321+00	0.5
$6h_{11/2}$	7.322+02	6.749+03	4.069+02	1.432+00	6.945+00	6.471+01	5.773–01	0.7
$7h_{11/2}$	5.380+02	6.555+03	9.025+01	2.054+02	1.410+01	1.818+01	1.536+00	0.4
$8h_{11/2}$	4.120+02	5.164+03	9.168+01	1.132+02	1.461+01	1.780+01	1.355+00	0.1
$9h_{11/2}$	3.255+02	5.077+03	9.227+01	6.969+01	1.491+01	1.771+01	1.318+00	0.2
$10h_{11/2}$	2.637+02	5.016+03	5.584+01	5.787+01	1.565+01	2.697+01	1.824+00	0.2
$11h_{11/2}$	2.179+02	3.971+03	4.461+01	4.097+01	1.564+01	3.601+01	1.990+00	0.4
$12h_{11/2}$	1.831+02	3.936+03	4.851+01	2.860+01	1.533+01	3.678+01	1.709+00	0.5
$7i_{11/2}$	5.380+02	4.291+03	1.033+02	1.955+02	1.249+01	2.609+01	6.488–01	0.4
$8i_{11/2}$	4.120+02	4.165+03	6.116+01	4.930+02	1.604+01	2.116+01	1.267+00	0.1
$9i_{11/2}$	3.255+02	4.078+03	4.922+01	3.494+02	1.744+01	2.214+01	1.653+00	0.1
$10i_{11/2}$	2.637+02	3.228+03	5.154+01	1.996+02	1.760+01	2.220+01	1.558+00	0.2
$11i_{11/2}$	2.179+02	3.182+03	5.268+01	1.292+02	1.778+01	2.210+01	1.549+00	0.3
$12i_{11/2}$	1.831+02	3.147+03	4.315+01	9.396+01	1.822+01	2.586+01	1.806+00	0.3
$7i_{13/2}$	5.379+02	4.291+03	1.097+02	1.622+02	1.228+01	2.602+01	5.579–01	0.4
$8i_{13/2}$	4.118+02	4.165+03	6.363+01	4.533+02	1.558+01	2.255+01	7.968–01	0.2
$9i_{13/2}$	3.254+02	4.078+03	4.531+01	3.662+02	1.756+01	2.353+01	1.732+00	0.1
$10i_{13/2}$	2.636+02	3.228+03	4.712+01	2.081+02	1.774+01	2.364+01	1.660+00	0.2
$11i_{13/2}$	2.178+02	3.182+03	4.764+01	1.342+02	1.796+01	2.359+01	1.685+00	0.3
$12i_{13/2}$	1.831+02	3.147+03	5.028+01	9.191+01	1.794+01	2.323+01	1.570+00	0.4
Xe <sup>51+</sup>								
$2s_{1/2}$	9.822+03	6.015+04	1.334+00	1.182+02	5.507+00	9.678+03	0.000+00	0.1
$3s_{1/2}$	4.296+03	5.462+04	3.580+00	8.058+02	4.111+00	9.679+03	0.000+00	0.1
$4s_{1/2}$	2.392+03	5.272+04	6.402+00	5.469+02	3.605+00	9.679+03	0.000+00	0.1
$5s_{1/2}$	1.520+03	5.185+04	9.956+00	2.528+02	3.334+00	9.680+03	0.000+00	0.2
$6s_{1/2}$	1.051+03	5.138+04	1.490+01	1.039+02	3.151+00	9.679+03	0.000+00	0.5
$7s_{1/2}$	7.692+02	5.110+04	2.794+00	1.953+03	3.090+00	6.068+04	0.000+00	0.6
$8s_{1/2}$	5.872+02	5.091+04	3.654+00	9.817+02	3.005+00	6.068+04	0.000+00	0.8
$9s_{1/2}$	4.630+02	5.079+04	4.740+00	4.916+02	2.936+00	6.068+04	0.000+00	1.1
$10s_{1/2}$	3.743+02	5.070+04	3.216+01	9.147+04	2.916+00	9.805+05	0.000+00	1.1
$11s_{1/2}$	3.089+02	5.064+04	3.898+01	5.389+04	2.876+00	9.805+05	0.000+00	1.3
$12s_{1/2}$	2.593+02	5.059+04	4.644+01	3.256+04	2.843+00	9.805+05	0.000+00	1.5
$2p_{1/2}$	9.702+03	6.003+04	1.264+03	3.802+00	3.599+00	1.027+02	1.883+00	0.4
$3p_{1/2}$	4.263+03	5.459+04	7.090+02	1.997+00	4.537+00	1.030+02	6.225–01	0.2
$4p_{1/2}$	2.378+03	5.271+04	4.309+02	1.486+00	5.181+00	1.034+02	1.418+00	0.3

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
5p <sub>1/2</sub>	1.513+03	5.184+04	3.854+02	8.752–01	5.298+00	1.031+02	1.565+00	1.0
6p <sub>1/2</sub>	1.047+03	5.137+04	6.898+01	6.774+00	5.550+00	5.638+02	3.398+00	0.2
7p <sub>1/2</sub>	7.667+02	5.109+04	8.124+01	3.753+00	5.395+00	5.637+02	2.936+00	0.3
8p <sub>1/2</sub>	5.856+02	5.091+04	9.734+01	2.140+00	5.229+00	5.640+02	2.344+00	0.6
9p <sub>1/2</sub>	4.618+02	5.079+04	1.097–01	2.206+05	5.410+00	4.472+05	7.890+02	0.7
10p <sub>1/2</sub>	3.735+02	5.070+04	1.135–01	1.729+05	5.379+00	4.472+05	7.891+02	0.7
11p <sub>1/2</sub>	3.083+02	4.006+04	1.141–01	1.367+05	5.366+00	4.472+05	7.890+02	0.7
12p <sub>1/2</sub>	2.588+02	3.165+04	1.398–01	1.138+05	5.250+00	4.469+05	4.833+02	0.9
2p <sub>3/2</sub>	9.323+03	5.965+04	1.066+03	6.712+00	3.363+00	1.033+02	1.351+00	0.3
3p <sub>3/2</sub>	4.150+03	5.448+04	1.754+02	1.465+01	5.853+00	1.069+02	9.936–01	0.4
4p <sub>3/2</sub>	2.331+03	5.266+04	2.621+02	3.478+00	5.441+00	1.069+02	1.590+00	0.2
5p <sub>3/2</sub>	1.489+03	5.182+04	3.146+02	1.364+00	5.254+00	1.063+02	1.661+00	0.2
6p <sub>3/2</sub>	1.033+03	5.136+04	5.162+01	1.073+01	5.693+00	5.084+02	5.088+00	0.2
7p <sub>3/2</sub>	7.580+02	5.108+04	6.220+01	6.087+00	5.497+00	5.086+02	3.834+00	0.4
8p <sub>3/2</sub>	5.798+02	5.091+04	7.478+01	3.530+00	5.321+00	5.055+02	2.928+00	0.7
9p <sub>3/2</sub>	4.577+02	5.078+04	8.999–02	4.419+05	5.357+00	4.472+05	7.890+02	1.3
10p <sub>3/2</sub>	3.705+02	4.012+04	9.687–02	3.426+05	5.308+00	4.472+05	7.891+02	1.3
11p <sub>3/2</sub>	3.061+02	4.005+04	9.882–02	2.702+05	5.289+00	4.472+05	7.890+02	1.2
12p <sub>3/2</sub>	2.571+02	3.165+04	9.887–02	2.145+05	5.283+00	4.472+05	7.890+02	1.0
3d <sub>3/2</sub>	4.138+03	5.447+04	9.147+02	3.961+00	4.059+00	1.391+02	9.334–01	0.4
4d <sub>3/2</sub>	2.326+03	5.265+04	1.151+03	6.436–01	4.268+00	1.381+02	6.752–01	0.5
5d <sub>3/2</sub>	1.487+03	5.181+04	5.546+02	1.513+00	6.068+00	5.602+01	8.949–01	0.5
6d <sub>3/2</sub>	1.031+03	4.078+04	3.031+02	2.190+00	7.149+00	5.569+01	1.251+00	0.5
7d <sub>3/2</sub>	7.571+02	4.050+04	9.387+01	5.701+00	7.903+00	1.340+02	2.456+00	0.5
8d <sub>3/2</sub>	5.792+02	3.197+04	1.037+02	3.488+00	7.753+00	1.340+02	2.157+00	0.4
9d <sub>3/2</sub>	4.573+02	2.525+04	2.534+00	2.736+02	8.230+00	4.488+03	5.586+01	0.3
10d <sub>3/2</sub>	3.702+02	2.516+04	2.811+00	2.350+02	8.082+00	4.486+03	4.275+01	0.5
11d <sub>3/2</sub>	3.058+02	1.989+04	3.117+00	1.965+02	7.954+00	4.462+03	3.339+01	0.7
12d <sub>3/2</sub>	2.569+02	1.984+04	3.392+00	1.634+02	7.849+00	4.450+03	2.689+01	0.9
3d <sub>5/2</sub>	4.105+03	5.443+04	1.129+03	2.205+00	3.744+00	1.382+02	8.755–01	0.2
4d <sub>5/2</sub>	2.312+03	5.264+04	1.214+03	5.682–01	4.090+00	1.384+02	6.486–01	0.8
5d <sub>5/2</sub>	1.480+03	5.181+04	5.011+02	1.947+00	6.443+00	4.197+01	9.809–01	0.5
6d <sub>5/2</sub>	1.027+03	4.077+04	1.807+02	4.364+00	7.754+00	6.416+01	1.735+00	0.4
7d <sub>5/2</sub>	7.544+02	3.215+04	4.069+01	1.311+01	8.368+00	2.289+02	5.227+00	0.2
8d <sub>5/2</sub>	5.774+02	3.197+04	4.552+01	8.520+00	8.191+00	2.293+02	4.329+00	0.3
9d <sub>5/2</sub>	4.561+02	2.525+04	5.216+01	5.747+00	7.977+00	2.295+02	3.409+00	0.6
10d <sub>5/2</sub>	3.693+02	2.516+04	2.324+01	1.254+01	8.018+00	5.214+02	6.041+00	0.7
11d <sub>5/2</sub>	3.051+02	1.989+04	2.676+01	9.244+00	7.824+00	5.223+02	4.610+00	1.0
12d <sub>5/2</sub>	2.564+02	1.984+04	3.089+00	1.744+02	7.899+00	4.453+03	3.020+01	1.0
4f <sub>5/2</sub>	2.312+03	3.370+04	6.374+02	4.907+00	5.178+00	1.032+02	6.237–01	0.5
5f <sub>5/2</sub>	1.479+03	2.627+04	5.302+02	3.960+00	7.246+00	3.106+01	8.178–01	0.2
6f <sub>5/2</sub>	1.027+03	2.582+04	3.193+02	5.847+00	8.582+00	3.247+01	9.399–01	0.4
7f <sub>5/2</sub>	7.543+02	2.033+04	2.209+02	6.018+00	9.641+00	3.234+01	1.249+00	0.3
8f <sub>5/2</sub>	5.773+02	2.016+04	4.737+01	1.365+01	1.098+01	1.036+02	4.005+00	0.3
9f <sub>5/2</sub>	4.560+02	1.592+04	5.405+01	9.222+00	1.069+01	1.042+02	3.131+00	0.3
10f <sub>5/2</sub>	3.693+02	1.583+04	6.064+01	6.423+00	1.044+01	1.049+02	2.562+00	0.5
11f <sub>5/2</sub>	3.051+02	1.252+04	6.906+00	3.602+01	1.081+01	8.409+02	1.690+01	0.5
12f <sub>5/2</sub>	2.563+02	1.247+04	7.549+00	3.088+01	1.065+01	8.360+02	1.374+01	0.7
4f <sub>7/2</sub>	2.305+03	3.370+04	9.864+02	1.136+00	4.614+00	1.010+02	7.319–01	0.2
5f <sub>7/2</sub>	1.476+03	2.627+04	5.216+02	4.148+00	7.214+00	3.115+01	7.984–01	0.3
6f <sub>7/2</sub>	1.025+03	2.582+04	2.491+02	9.480+00	9.325+00	2.919+01	1.157+00	0.3
7f <sub>7/2</sub>	7.530+02	2.033+04	2.145+02	6.455+00	9.771+00	3.070+01	1.291+00	0.2
8f <sub>7/2</sub>	5.765+02	2.016+04	4.800+01	1.393+01	1.097+01	1.004+02	3.848+00	0.2
9f <sub>7/2</sub>	4.554+02	1.592+04	5.292+01	9.311+00	1.076+01	1.011+02	3.237+00	0.3
10f <sub>7/2</sub>	3.688+02	1.583+04	5.953+01	6.504+00	1.051+01	1.015+02	2.637+00	0.6
11f <sub>7/2</sub>	3.048+02	1.252+04	9.014+00	2.693+01	1.083+01	6.246+02	1.324+01	0.6
12f <sub>7/2</sub>	2.561+02	1.247+04	9.859+00	2.297+01	1.066+01	6.243+02	1.075+01	0.8
5g <sub>7/2</sub>	1.476+03	1.694+04	1.325+02	2.505+02	9.287+00	5.440+01	3.319–02	0.4
6g <sub>7/2</sub>	1.025+03	1.649+04	5.997+01	2.001+02	1.214+01	5.713+01	1.470+00	0.7
7g <sub>7/2</sub>	7.530+02	1.297+04	5.849+01	7.825+01	1.267+01	5.730+01	1.272+00	0.3
8g <sub>7/2</sub>	5.765+02	1.279+04	5.370+01	3.722+01	1.328+01	5.650+01	2.699+00	0.2
9g <sub>7/2</sub>	4.554+02	1.010+04	5.602+01	2.196+01	1.330+01	5.658+01	2.677+00	0.2
10g <sub>7/2</sub>	3.688+02	1.001+04	6.032+01	1.446+01	1.315+01	5.681+01	2.402+00	0.3
11g <sub>7/2</sub>	3.048+02	9.951+03	6.882+01	9.938+00	1.285+01	5.607+01	1.966+00	0.5
12g <sub>7/2</sub>	2.561+02	7.874+03	3.090+01	1.195+01	1.317+01	1.194+02	3.614+00	0.6
5g <sub>9/2</sub>	1.474+03	1.694+04	1.640+02	1.510+02	8.822+00	5.387+01	1.993–01	0.5
6g <sub>9/2</sub>	1.024+03	1.649+04	5.867+01	1.966+02	1.231+01	5.474+01	2.107+00	0.7
7g <sub>9/2</sub>	7.523+02	1.297+04	5.559+01	7.711+01	1.295+01	5.470+01	1.881+00	0.3
8g <sub>9/2</sub>	5.759+02	1.279+04	5.471+01	3.681+01	1.334+01	5.393+01	2.723+00	0.2
9g <sub>9/2</sub>	4.551+02	1.010+04	5.669+01	2.165+01	1.339+01	5.378+01	2.741+00	0.1
10g <sub>9/2</sub>	3.686+02	1.001+04	6.248+01	1.432+01	1.316+01	5.402+01	2.345+00	0.3
11g <sub>9/2</sub>	3.046+02	7.923+03	7.268+01	9.710+00	1.277+01	5.395+01	1.860+00	0.6
12g <sub>9/2</sub>	2.559+02	7.874+03	3.553+00	3.640+01	1.364+01	9.088+02	2.923+01	0.5
6h <sub>9/2</sub>	1.024+03	1.067+04	2.771+02	2.399+01	9.913+00	2.516+01	8.971–01	0.1
7h <sub>9/2</sub>	7.523+02	8.370+03	3.606+02	6.830+00	9.965+00	2.362+01	6.608–01	0.5

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
$8h_{9/2}$	5.759+02	8.194+03	1.611+02	5.003+01	1.368+01	1.828+01	1.077+00	0.1
$9h_{9/2}$	4.551+02	6.472+03	1.665+02	3.001+01	1.385+01	1.824+01	1.015+00	0.3
$10h_{9/2}$	3.686+02	6.385+03	7.490+01	3.979+01	1.550+01	2.980+01	1.829+00	0.2
$11h_{9/2}$	3.046+02	6.321+03	5.853+01	2.903+01	1.559+01	3.962+01	2.062+00	0.3
$12h_{9/2}$	2.559+02	6.273+03	6.456+01	2.027+01	1.530+01	3.964+01	1.762+00	0.5
$6h_{11/2}$	1.023+03	1.067+04	5.616+01	1.393+03	1.211+01	6.247+01	8.076–01	0.4
$7h_{11/2}$	7.517+02	8.370+03	3.758+01	4.911+02	1.455+01	5.887+01	8.690–02	0.3
$8h_{11/2}$	5.756+02	8.194+03	3.610+01	1.888+02	1.522+01	5.928+01	1.550–01	0.2
$9h_{11/2}$	4.548+02	6.472+03	3.128+01	7.787+01	1.614+01	5.989+01	3.691+00	0.1
$10h_{11/2}$	3.684+02	6.385+03	3.246+01	4.593+01	1.621+01	5.990+01	3.679+00	0.1
$11h_{11/2}$	3.044+02	6.321+03	3.339+01	3.008+01	1.626+01	5.962+01	3.619+00	0.2
$12h_{11/2}$	2.558+02	6.273+03	3.730+01	2.302+01	1.590+01	6.008+01	2.917+00	0.4
$7i_{11/2}$	7.517+02	6.768+03	1.447+02	1.339+02	1.259+01	2.586+01	8.361–01	0.2
$8i_{11/2}$	5.756+02	5.327+03	7.672+01	3.719+02	1.588+01	2.516+01	1.116+00	0.1
$9i_{11/2}$	4.548+02	5.207+03	6.834+01	2.333+02	1.718+01	2.396+01	1.556+00	0.1
$10i_{11/2}$	3.684+02	5.120+03	6.781+01	1.405+02	1.767+01	2.359+01	1.666+00	0.1
$11i_{11/2}$	3.044+02	4.057+03	7.275+01	8.701+01	1.763+01	2.345+01	1.530+00	0.2
$12i_{11/2}$	2.558+02	4.009+03	2.124+01	5.275+01	1.896+01	6.665+01	4.530+00	0.1
$7i_{13/2}$	7.514+02	6.768+03	1.436+02	1.415+02	1.260+01	2.558+01	7.026–01	0.2
$8i_{13/2}$	5.754+02	5.327+03	7.618+01	3.790+02	1.593+01	2.492+01	1.156+00	0.1
$9i_{13/2}$	4.546+02	5.207+03	7.035+01	2.315+02	1.717+01	2.321+01	1.535+00	0.1
$10i_{13/2}$	3.683+02	5.120+03	7.312+01	1.332+02	1.736+01	2.328+01	1.474+00	0.2
$11i_{13/2}$	3.044+02	4.057+03	7.436+01	8.607+01	1.756+01	2.321+01	1.491+00	0.2
$12i_{13/2}$	2.557+02	4.009+03	7.589+01	6.018+01	1.763+01	2.320+01	1.436+00	0.3
Xe <sup>52+</sup>								
$1s_{1/2}$	4.037+04	9.070+04	6.506–01	2.752+02	6.297+00	9.680+03	2.254–01	0.1
$2s_{1/2}$	1.013+04	6.046+04	9.783–01	3.467+01	5.996+00	9.680+03	5.340–01	0.3
$3s_{1/2}$	4.443+03	5.477+04	3.687+00	8.769+02	4.080+00	9.682+03	1.445+00	0.1
$4s_{1/2}$	2.477+03	5.280+04	6.547+00	5.785+02	3.586+00	9.683+03	1.546+00	0.1
$5s_{1/2}$	1.576+03	5.190+04	1.011+01	2.660+02	3.321+00	9.683+03	3.067+00	0.2
$6s_{1/2}$	1.089+03	5.142+04	1.437+01	1.156+02	3.157+00	9.684+03	5.712+00	0.4
$7s_{1/2}$	7.977+02	5.112+04	1.622+01	6.626+01	3.097+00	9.685+03	8.532+00	0.5
$8s_{1/2}$	6.092+02	5.094+04	2.062+01	3.308+01	3.010+00	9.689+03	6.349+00	0.6
$9s_{1/2}$	4.803+02	5.081+04	4.888+00	4.291+02	2.989+00	4.474+04	1.714+01	0.7
$10s_{1/2}$	3.884+02	5.072+04	5.828+00	2.496+02	2.939+00	4.474+04	1.298+01	0.8
$11s_{1/2}$	3.206+02	5.065+04	2.024+00	1.732+03	2.913+00	1.447+05	2.878+01	0.9
$12s_{1/2}$	2.691+02	5.060+04	2.335+00	1.096+03	2.880+00	1.447+05	2.233+01	1.1
$2p_{1/2}$	1.007+04	6.040+04	1.318+03	3.677+00	3.573+00	1.029+02	1.852+00	0.4
$3p_{1/2}$	4.426+03	5.475+04	1.139+03	8.813–01	4.088+00	1.048+02	8.966–01	0.1
$4p_{1/2}$	2.470+03	5.280+04	5.746+02	1.013+00	4.894+00	1.032+02	1.230+00	0.2
$5p_{1/2}$	1.572+03	5.190+04	2.171+02	2.116+00	5.367+00	2.019+02	1.861+00	0.2
$6p_{1/2}$	1.087+03	5.141+04	2.495+02	1.058+00	5.209+00	2.022+02	1.702+00	0.5
$7p_{1/2}$	7.964+02	5.112+04	4.713+01	8.755+00	5.499+00	9.121+02	4.348+00	0.3
$8p_{1/2}$	6.083+02	5.094+04	5.446+01	5.312+00	5.370+00	9.120+02	3.587+00	0.4
$9p_{1/2}$	4.797+02	5.081+04	6.349+01	3.279+00	5.240+00	9.114+02	2.886+00	0.7
$10p_{1/2}$	3.880+02	5.071+04	7.123+01	2.177+00	5.139+00	9.112+02	2.411+00	1.1
$11p_{1/2}$	3.203+02	4.007+04	1.770–01	7.342+04	5.327+00	3.172+05	4.755+02	0.8
$12p_{1/2}$	2.688+02	4.002+04	1.750–01	5.951+04	5.322+00	3.172+05	4.755+02	0.8
$2p_{3/2}$	9.667+03	5.999+04	1.150+03	5.812+00	3.330+00	1.031+02	1.516+00	0.2
$3p_{3/2}$	4.307+03	5.463+04	1.832+02	1.430+01	5.841+00	1.050+02	2.021–01	0.3
$4p_{3/2}$	2.420+03	5.275+04	3.286+02	2.714+00	5.203+00	1.062+02	1.272+00	0.3
$5p_{3/2}$	1.546+03	5.187+04	3.307+02	1.305+00	5.225+00	1.060+02	1.631+00	0.2
$6p_{3/2}$	1.073+03	5.140+04	3.209+01	2.245+01	5.735+00	8.165+02	7.376+00	0.2
$7p_{3/2}$	7.871+02	5.111+04	3.688+01	1.358+01	5.587+00	8.174+02	5.984+00	0.3
$8p_{3/2}$	6.021+02	5.093+04	4.297+01	8.419+00	5.438+00	8.161+02	4.592+00	0.6
$9p_{3/2}$	4.754+02	5.080+04	5.000+01	5.324+00	5.299+00	8.165+02	3.560+00	0.9
$10p_{3/2}$	3.848+02	4.013+04	5.999+01	3.269+00	5.150+00	8.159+02	2.728+00	1.1
$11p_{3/2}$	3.179+02	4.007+04	1.511–01	1.451+05	5.254+00	3.172+05	4.761+02	1.4
$12p_{3/2}$	2.670+02	3.166+04	1.539–01	1.138+05	5.241+00	3.172+05	4.761+02	1.1
$3d_{3/2}$	4.301+03	5.463+04	1.038+03	2.945+00	3.986+00	1.391+02	9.527–01	0.4
$4d_{3/2}$	2.417+03	5.274+04	1.193+03	6.218–01	4.271+00	1.392+02	6.756–01	0.5
$5d_{3/2}$	1.545+03	5.187+04	5.400+02	1.649+00	6.235+00	5.299+01	9.379–01	0.5
$6d_{3/2}$	1.072+03	4.082+04	2.361+02	3.103+00	7.391+00	6.716+01	1.441+00	0.4
$7d_{3/2}$	7.867+02	4.053+04	9.157+01	5.879+00	7.933+00	1.409+02	2.572+00	0.5
$8d_{3/2}$	6.018+02	3.199+04	1.010+02	3.609+00	7.787+00	1.410+02	2.265+00	0.4
$9d_{3/2}$	4.752+02	3.187+04	5.437+00	1.020+02	8.202+00	2.213+03	2.713+01	0.3
$10d_{3/2}$	3.847+02	2.518+04	6.030+00	8.242+01	8.058+00	2.206+03	2.104+01	0.5
$11d_{3/2}$	3.178+02	2.511+04	6.529+00	6.622+01	7.949+00	2.207+03	1.726+01	0.7
$12d_{3/2}$	2.669+02	1.985+04	7.298+00	5.335+01	7.814+00	2.204+03	1.334+01	0.9
$3d_{5/2}$	4.265+03	5.459+04	9.437+02	4.077+00	3.928+00	1.389+02	7.673–01	0.2
$4d_{5/2}$	2.402+03	5.273+04	8.945+02	1.376+00	5.201+00	4.922+01	8.108–01	0.3
$5d_{5/2}$	1.537+03	5.186+04	4.862+02	2.112+00	6.564+00	4.196+01	1.017+00	0.5
$6d_{5/2}$	1.067+03	4.081+04	1.949+02	3.999+00	7.748+00	6.168+01	1.717+00	0.4

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av.}} \%$
$7d_{5/2}$	7.838+02	4.053+04	6.758+01	7.894+00	8.198+00	1.551+02	3.451+00	0.4
$8d_{5/2}$	5.999+02	3.199+04	7.505+01	4.950+00	8.035+00	1.550+02	2.952+00	0.4
$9d_{5/2}$	4.738+02	2.527+04	8.877+01	3.139+00	7.768+00	1.551+02	2.283+00	0.7
$10d_{5/2}$	3.837+02	2.518+04	1.578+01	2.076+01	8.071+00	7.780+02	8.873+00	0.7
$11d_{5/2}$	3.170+02	1.990+04	1.808+01	1.575+01	7.893+00	7.749+02	6.731+00	0.9
$12d_{5/2}$	2.663+02	1.985+04	2.007+01	1.207+01	7.756+00	7.759+02	5.396+00	1.1
$4f_{5/2}$	2.402+03	3.379+04	9.692+02	1.310+00	4.740+00	1.033+02	7.530+01	0.2
$5f_{5/2}$	1.537+03	3.293+04	6.006+02	2.912+00	6.920+00	3.518+01	7.740+01	0.4
$6f_{5/2}$	1.067+03	2.586+04	3.384+02	5.578+00	8.724+00	2.938+01	9.918+01	0.3
$7f_{5/2}$	7.838+02	2.036+04	1.317+02	1.050+01	1.026+01	4.666+01	1.765+00	0.2
$8f_{5/2}$	5.999+02	2.018+04	1.424+02	5.967+00	1.015+01	4.683+01	1.628+00	0.3
$9f_{5/2}$	4.738+02	1.594+04	1.033+02	5.469+00	1.026+01	6.562+01	1.883+00	0.4
$10f_{5/2}$	3.837+02	1.585+04	1.922+01	1.638+01	1.084+01	3.021+02	7.318+00	0.4
$11f_{5/2}$	3.170+02	1.253+04	2.126+01	1.290+01	1.064+01	3.027+02	5.956+00	0.6
$12f_{5/2}$	2.663+02	1.248+04	2.340+01	1.028+01	1.046+01	3.031+02	4.864+00	0.8
$4f_{7/2}$	2.394+03	3.379+04	1.011+03	1.141+00	4.641+00	1.009+02	7.362+01	0.2
$5f_{7/2}$	1.533+03	3.292+04	4.982+02	5.085+00	7.618+00	2.723+01	8.985+01	0.5
$6f_{7/2}$	1.065+03	2.586+04	2.803+02	8.006+00	9.166+00	2.869+01	1.107+00	0.3
$7f_{7/2}$	7.824+02	2.036+04	2.449+02	5.579+00	9.690+00	2.844+01	1.231+00	0.4
$8f_{7/2}$	5.989+02	2.018+04	8.321+01	9.382+00	1.070+01	6.522+01	2.522+00	0.2
$9f_{7/2}$	4.732+02	1.594+04	9.512+01	5.923+00	1.039+01	6.625+01	2.035+00	0.4
$10f_{7/2}$	3.832+02	1.585+04	5.141+01	7.266+00	1.059+01	1.193+02	3.080+00	0.5
$11f_{7/2}$	3.167+02	1.253+04	6.017+01	5.173+00	1.026+01	1.196+02	2.376+00	0.8
$12f_{7/2}$	2.660+02	1.248+04	4.906+00	4.754+01	1.070+01	1.288+03	2.174+01	0.7
$5g_{7/2}$	1.533+03	1.700+04	1.361+02	2.460+02	9.335+00	5.398+01	3.241+02	0.4
$6g_{7/2}$	1.065+03	1.653+04	6.992+01	1.781+02	1.193+01	5.433+01	2.966+02	0.6
$7g_{7/2}$	7.824+02	1.300+04	6.264+01	7.049+01	1.280+01	5.321+01	1.681+00	0.3
$8g_{7/2}$	5.989+02	1.281+04	5.918+01	3.476+01	1.323+01	5.409+01	2.578+00	0.2
$9g_{7/2}$	4.732+02	1.012+04	6.121+01	2.049+01	1.328+01	5.411+01	2.601+00	0.1
$10g_{7/2}$	3.832+02	1.003+04	6.355+01	1.386+01	1.311+01	5.704+01	2.350+00	0.3
$11g_{7/2}$	3.167+02	9.963+02	7.098+01	9.604+00	1.282+01	5.725+01	1.962+00	0.5
$12g_{7/2}$	2.660+02	7.884+03	3.686+01	1.078+01	1.308+01	1.072+02	3.167+00	0.6
$5g_{9/2}$	1.531+03	1.700+04	1.355+02	2.515+02	9.312+00	5.400+01	3.208+02	0.3
$6g_{9/2}$	1.064+03	1.653+04	6.816+01	1.836+02	1.201+01	5.359+01	3.185+01	0.5
$7g_{9/2}$	7.815+02	1.299+04	6.229+01	7.017+01	1.290+01	5.144+01	1.867+00	0.3
$8g_{9/2}$	5.984+02	1.281+04	6.847+01	3.471+01	1.287+01	5.141+01	1.880+00	0.3
$9g_{9/2}$	4.728+02	1.012+04	6.191+01	2.043+01	1.333+01	5.206+01	2.614+00	0.1
$10g_{9/2}$	3.829+02	1.003+04	6.857+01	1.341+01	1.309+01	5.223+01	2.229+00	0.3
$11g_{9/2}$	3.164+02	9.962+03	3.629+01	1.296+01	1.341+01	9.417+01	3.685+00	0.4
$12g_{9/2}$	2.659+02	7.884+03	4.243+01	1.004+01	1.301+01	9.372+01	2.796+00	0.6
$6h_{9/2}$	1.064+03	1.071+04	2.882+02	2.298+01	9.936+00	2.498+01	9.110+01	0.1
$7h_{9/2}$	7.815+02	8.400+03	3.709+02	6.775+00	1.000+01	2.363+01	6.658+01	0.4
$8h_{9/2}$	5.984+02	8.217+03	2.781+02	1.549+01	1.209+01	1.656+01	7.739+01	0.4
$9h_{9/2}$	4.728+02	8.091+03	1.309+02	4.084+01	1.446+01	2.114+01	1.233+00	0.1
$10h_{9/2}$	3.829+02	6.400+03	1.064+02	3.368+01	1.520+01	2.285+01	1.470+00	0.4
$11h_{9/2}$	3.164+02	6.333+03	8.844+01	2.326+01	1.489+01	3.215+01	1.442+00	0.5
$12h_{9/2}$	2.659+02	6.283+03	3.105+01	2.267+01	1.600+01	7.405+01	3.546+00	0.3
$6h_{11/2}$	1.063+03	1.071+04	2.874+02	2.326+01	9.918+00	2.499+01	8.968+01	0.1
$7h_{11/2}$	7.810+02	8.399+03	3.579+02	7.600+00	1.009+01	2.364+01	6.705+01	0.5
$8h_{11/2}$	5.980+02	8.216+03	1.498+02	5.767+01	1.395+01	1.911+01	1.151+00	0.1
$9h_{11/2}$	4.725+02	8.091+03	1.514+02	3.545+01	1.421+01	1.905+01	1.125+00	0.2
$10h_{11/2}$	3.827+02	6.399+03	7.475+01	3.900+01	1.553+01	3.083+01	1.874+00	0.1
$11h_{11/2}$	3.163+02	6.333+03	2.567+01	3.009+01	1.629+01	8.092+01	4.577+00	0.2
$12h_{11/2}$	2.658+02	6.282+03	2.581+01	2.072+01	1.637+01	8.088+01	4.602+00	0.3
$7i_{11/2}$	7.810+02	6.798+03	1.337+02	1.854+02	1.300+01	2.568+01	9.661+01	0.1
$8i_{11/2}$	5.980+02	5.350+03	8.623+01	3.148+02	1.530+01	2.672+01	6.343+02	0.2
$9i_{11/2}$	4.725+02	5.224+03	9.807+01	1.707+02	1.664+01	1.918+01	1.284+00	0.1
$10i_{11/2}$	3.827+02	5.135+03	1.013+02	1.026+02	1.685+01	1.922+01	1.233+00	0.2
$11i_{11/2}$	3.163+02	5.068+03	1.053+02	6.529+01	1.686+01	1.950+01	1.155+00	0.3
$12i_{11/2}$	2.658+02	4.019+03	5.542+01	6.130+01	1.816+01	3.030+01	1.951+00	0.2
$7i_{13/2}$	7.806+02	6.797+03	1.351+02	1.821+02	1.302+01	2.511+01	9.886+01	0.1
$8i_{13/2}$	5.977+02	5.350+03	9.870+01	2.689+02	1.562+01	2.124+01	1.142+00	0.1
$9i_{13/2}$	4.723+02	5.224+03	7.686+01	2.133+02	1.707+01	2.253+01	1.484+00	0.1
$10i_{13/2}$	3.826+02	5.134+03	7.559+01	1.316+02	1.757+01	2.232+01	1.586+00	0.1
$11i_{13/2}$	3.162+02	5.068+03	7.706+01	8.588+01	1.775+01	2.225+01	1.557+00	0.2
$12i_{13/2}$	2.657+02	4.019+03	8.297+01	5.523+01	1.744+01	2.294+01	1.357+00	0.3
Xe <sup>53+</sup>								
$1s_{1/2}$	4.134+04	9.167+04	6.411+01	2.828+02	6.305+00	9.680+03	2.200+01	0.1
$2s_{1/2}$	1.044+04	6.077+04	1.007+00	4.273+01	5.936+00	9.680+03	6.332+01	0.3
$3s_{1/2}$	4.593+03	5.492+04	3.786+00	9.488+02	4.052+00	9.680+03	2.515+00	0.1
$4s_{1/2}$	2.564+03	5.289+04	6.678+00	6.105+02	3.569+00	9.681+03	2.644+00	0.1
$5s_{1/2}$	1.632+03	5.196+04	1.030+01	2.783+02	3.307+00	9.681+03	2.855+00	0.2
$6s_{1/2}$	1.129+03	5.146+04	1.511+01	1.159+02	3.132+00	9.681+03	3.078+00	0.4
$7s_{1/2}$	8.267+02	5.115+04	1.640+01	6.951+01	3.087+00	9.681+03	8.679+00	0.4
$8s_{1/2}$	6.315+02	5.096+04	2.087+01	3.457+01	3.000+00	9.681+03	6.427+00	0.6

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
9s <sub>1/2</sub>	4.980+02	5.082+04	2.608+01	1.782+01	2.929+00	9.681+03	4.954+00	0.8
10s <sub>1/2</sub>	4.028+02	5.073+04	3.102+01	1.014+01	2.874+00	9.681+03	4.034+00	0.9
11s <sub>1/2</sub>	3.325+02	5.066+04	1.390+01	3.944+01	2.869+00	2.372+04	6.153+00	1.0
12s <sub>1/2</sub>	2.791+02	5.061+04	1.603+01	2.446+01	2.832+00	2.372+04	5.103+00	1.1
2p <sub>1/2</sub>	1.044+04	6.077+04	1.343+03	3.733+00	3.565+00	1.030+02	1.847+00	0.3
3p <sub>1/2</sub>	4.593+03	5.492+04	5.385+02	3.208+00	4.918+00	9.908+01	3.020–01	0.3
4p <sub>1/2</sub>	2.564+03	5.289+04	8.117+02	6.094–01	4.574+00	9.926+01	1.080+00	0.3
5p <sub>1/2</sub>	1.632+03	5.196+04	2.127+02	2.212+00	5.397+00	2.058+02	1.911+00	0.2
6p <sub>1/2</sub>	1.129+03	5.146+04	2.528+02	1.060+00	5.212+00	2.051+02	1.717+00	0.4
7p <sub>1/2</sub>	8.267+02	5.115+04	1.371+01	5.718+01	5.654+00	2.777+03	1.385+01	0.2
8p <sub>1/2</sub>	6.315+02	5.096+04	1.627+01	3.743+01	5.500+00	2.779+03	9.575+00	0.3
9p <sub>1/2</sub>	4.980+02	5.082+04	1.823+01	2.526+01	5.405+00	2.775+03	7.760+00	0.5
10p <sub>1/2</sub>	4.028+02	5.073+04	2.041+01	1.735+01	5.316+00	2.775+03	6.240+00	0.7
11p <sub>1/2</sub>	3.325+02	4.008+04	2.348+01	1.161+01	5.221+00	2.776+03	4.917+00	1.0
12p <sub>1/2</sub>	2.791+02	4.003+04	9.785+00	4.542+01	5.223+00	6.793+03	9.032+00	1.1
2p <sub>3/2</sub>	1.002+04	6.034+04	9.454+02	9.757+00	3.487+00	1.036+02	1.625+00	0.2
3p <sub>3/2</sub>	4.467+03	5.479+04	1.578+03	5.206–01	3.519+00	1.036+02	8.512–01	0.2
4p <sub>3/2</sub>	2.510+03	5.284+04	8.854+02	5.880–01	4.194+00	1.041+02	9.697–01	0.5
5p <sub>3/2</sub>	1.605+03	5.193+04	3.291+02	1.334+00	5.274+00	1.041+02	1.689+00	0.2
6p <sub>3/2</sub>	1.113+03	5.144+04	6.787+01	7.781+00	5.633+00	4.242+02	4.148+00	0.2
7p <sub>3/2</sub>	8.169+02	5.114+04	7.969+01	4.399+00	5.465+00	4.239+02	3.371+00	0.4
8p <sub>3/2</sub>	6.249+02	5.095+04	3.557+00	5.121+02	5.566+00	9.121+03	4.342+01	0.5
9p <sub>3/2</sub>	4.934+02	5.082+04	3.907+00	3.756+02	5.480+00	9.105+03	3.474+01	0.6
10p <sub>3/2</sub>	3.994+02	4.015+04	4.440+00	2.745+02	5.378+00	9.105+03	2.563+01	0.8
11p <sub>3/2</sub>	3.299+02	4.008+04	4.908+00	2.034+02	5.302+00	9.105+03	2.006+01	1.0
12p <sub>3/2</sub>	2.771+02	3.167+04	7.724+00	8.209+01	5.201+00	6.771+03	1.115+01	1.2
3d <sub>3/2</sub>	4.467+03	5.479+04	1.062+03	2.958+00	4.004+00	1.390+02	9.554–01	0.4
4d <sub>3/2</sub>	2.510+03	5.284+04	1.233+03	6.048–01	4.283+00	1.388+02	6.776–01	0.5
5d <sub>3/2</sub>	1.605+03	5.193+04	4.407+02	2.418+00	6.614+00	5.373+01	1.039+00	0.6
6d <sub>3/2</sub>	1.113+03	5.144+04	2.949+02	2.334+00	7.122+00	6.543+01	1.263+00	0.6
7d <sub>3/2</sub>	8.169+02	4.056+04	9.853+01	5.377+00	7.935+00	1.357+02	2.546+00	0.4
8d <sub>3/2</sub>	6.249+02	3.202+04	3.444+01	1.272+01	8.140+00	3.649+02	5.475+00	0.3
9d <sub>3/2</sub>	4.934+02	3.188+04	3.802+01	8.784+00	7.994+00	3.653+02	4.579+00	0.4
10d <sub>3/2</sub>	3.994+02	2.519+04	4.313+01	6.171+00	7.817+00	3.648+02	3.642+00	0.7
11d <sub>3/2</sub>	3.299+02	2.512+04	4.848+01	4.412+00	7.654+00	3.653+02	2.960+00	1.0
12d <sub>3/2</sub>	2.771+02	1.986+04	2.414+00	2.906+02	7.847+00	6.816+03	3.982+01	0.9
3d <sub>5/2</sub>	4.427+03	5.475+04	1.272+03	1.788+00	3.707+00	1.388+02	8.854–01	0.2
4d <sub>5/2</sub>	2.494+03	5.282+04	9.257+02	1.335+00	5.210+00	4.901+01	8.126–01	0.3
5d <sub>5/2</sub>	1.596+03	5.192+04	6.181+02	1.370+00	6.032+00	4.934+01	8.756–01	0.5
6d <sub>5/2</sub>	1.108+03	4.086+04	2.836+02	2.550+00	7.433+00	5.054+01	1.395+00	0.3
7d <sub>5/2</sub>	8.138+02	4.056+04	8.156+01	6.357+00	8.174+00	1.341+02	3.148+00	0.3
8d <sub>5/2</sub>	6.228+02	3.201+04	9.387+01	3.897+00	7.944+00	1.343+02	2.537+00	0.4
9d <sub>5/2</sub>	4.919+02	3.188+04	8.637+00	4.931+01	8.285+00	1.289+03	1.905+01	0.4
10d <sub>5/2</sub>	3.984+02	2.519+04	9.739+00	3.966+01	8.110+00	1.286+03	1.437+01	0.6
11d <sub>5/2</sub>	3.291+02	2.512+04	1.073+01	3.143+01	7.976+00	1.283+03	1.144+01	0.9
12d <sub>5/2</sub>	2.765+02	1.986+04	2.199+00	3.064+02	7.898+00	6.778+03	4.482+01	1.0
4f <sub>5/2</sub>	2.494+03	4.224+04	9.704+02	1.415+00	4.802+00	1.030+02	7.626–01	0.3
5f <sub>5/2</sub>	1.596+03	3.299+04	5.422+02	4.002+00	7.216+00	3.491+01	7.999–01	0.4
6f <sub>5/2</sub>	1.108+03	2.590+04	4.007+02	3.888+00	8.144+00	3.490+01	8.578–01	0.5
7f <sub>5/2</sub>	8.138+02	2.039+04	2.254+02	5.879+00	9.661+00	3.453+01	1.279+00	0.2
8f <sub>5/2</sub>	6.228+02	2.020+04	5.253+01	1.339+01	1.081+01	1.083+02	3.567+00	0.2
9f <sub>5/2</sub>	4.919+02	1.596+04	5.728+01	8.757+00	1.066+01	1.082+02	3.135+00	0.3
10f <sub>5/2</sub>	3.984+02	1.586+04	6.404+01	6.095+00	1.042+01	1.092+02	2.583+00	0.5
11f <sub>5/2</sub>	3.291+02	1.579+04	1.061+01	2.401+01	1.077+01	6.008+02	1.197+01	0.5
12f <sub>5/2</sub>	2.765+02	1.249+04	1.185+01	2.026+01	1.058+01	5.966+02	9.435+00	0.7
4f <sub>7/2</sub>	2.486+03	3.388+04	1.043+03	1.114+00	4.645+00	1.031+02	7.379–01	0.2
5f <sub>7/2</sub>	1.592+03	3.298+04	4.609+02	6.228+00	7.642+00	3.123+01	8.356–01	0.4
6f <sub>7/2</sub>	1.106+03	2.590+04	2.549+02	9.367+00	9.367+00	3.065+01	1.176+00	0.3
7f <sub>7/2</sub>	8.123+02	2.039+04	2.389+02	5.707+00	9.711+00	3.050+01	1.264+00	0.3
8f <sub>7/2</sub>	6.218+02	2.020+04	1.319+02	6.492+00	1.033+01	4.801+01	1.789+00	0.2
9f <sub>7/2</sub>	4.912+02	1.596+04	7.830+01	6.941+00	1.051+01	8.112+01	2.412+00	0.4
10f <sub>7/2</sub>	3.978+02	1.586+04	9.521+00	2.705+01	1.103+01	5.803+02	1.552+01	0.3
11f <sub>7/2</sub>	3.287+02	1.579+04	1.048+01	2.323+01	1.083+01	5.820+02	1.236+01	0.6
12f <sub>7/2</sub>	2.762+02	1.249+04	1.173+01	1.991+01	1.062+01	5.797+02	9.650+00	0.8
5g <sub>7/2</sub>	1.592+03	1.706+04	1.511+02	2.022+02	9.190+00	5.417+01	8.882–02	0.3
6g <sub>7/2</sub>	1.106+03	1.657+04	6.075+02	1.739+00	7.250+00	4.704+01	5.963–01	0.9
7g <sub>7/2</sub>	8.123+02	1.303+04	1.962+02	2.253+01	1.162+01	2.384+01	1.163+00	0.2
8g <sub>7/2</sub>	6.218+02	1.284+04	1.605+02	1.694+01	1.230+01	2.581+01	1.360+00	0.2
9g <sub>7/2</sub>	4.912+02	1.270+04	7.915+01	1.755+01	1.315+01	4.481+01	2.223+00	0.2
10g <sub>7/2</sub>	3.978+02	1.004+04	9.363+01	1.093+01	1.274+01	4.425+01	1.748+00	0.4
11g <sub>7/2</sub>	3.287+02	9.975+03	3.182+01	1.345+01	1.344+01	1.125+02	4.266+00	0.3
12g <sub>7/2</sub>	2.762+02	9.922+03	3.552+01	1.067+01	1.315+01	1.129+02	3.420+00	0.6
5g <sub>9/2</sub>	1.589+03	1.705+04	1.418+02	2.368+02	9.300+00	5.404+01	2.982–02	0.3
6g <sub>9/2</sub>	1.104+03	1.657+04	6.924+01	1.808+02	1.201+01	5.492+01	4.147–02	0.5

(continued on next page)

**Table 2** (continued)

Shell	$E_{\text{th}}$ , eV	$k_{\text{max}}$ , eV	$k_0$ , eV	$\sigma_0$ , Mb	$p$	$y_a$	$y_w$	$\delta_{\text{av}}$ , %
7g <sub>9/2</sub>	8.114+02	1.302+04	6.574+01	6.709+01	1.285+01	5.131+01	1.802+00	0.2
8g <sub>9/2</sub>	6.212+02	1.283+04	7.370+01	3.275+01	1.278+01	5.113+01	1.794+00	0.4
9g <sub>9/2</sub>	4.908+02	1.270+04	6.512+01	1.963+01	1.328+01	5.236+01	2.556+00	0.2
10g <sub>9/2</sub>	3.975+02	1.004+04	7.173+01	1.286+01	1.306+01	5.245+01	2.204+00	0.3
11g <sub>9/2</sub>	3.285+02	9.974+03	1.633+01	1.781+01	1.365+01	2.062+02	7.943+00	0.3
12g <sub>9/2</sub>	2.760+02	7.894+03	1.860+01	1.487+01	1.339+01	2.011+02	6.230+00	0.5
6h <sub>9/2</sub>	1.104+03	1.075+04	2.994+02	2.198+01	9.945+00	2.499+01	9.193–01	0.1
7h <sub>9/2</sub>	8.114+02	1.046+04	3.930+02	6.022+00	9.916+00	2.401+01	6.575–01	0.5
8h <sub>9/2</sub>	6.212+02	8.239+03	1.470+02	5.811+01	1.400+01	2.026+01	1.178+00	0.1
9h <sub>9/2</sub>	4.908+02	8.109+03	1.467+02	3.613+01	1.433+01	2.017+01	1.178+00	0.1
10h <sub>9/2</sub>	3.975+02	6.414+03	5.323+01	4.097+01	1.583+01	4.295+01	2.508+00	0.1
11h <sub>9/2</sub>	3.285+02	6.345+03	5.805+01	2.729+01	1.565+01	4.273+01	2.216+00	0.3
12h <sub>9/2</sub>	2.760+02	6.293+03	6.566+01	1.903+01	1.532+01	4.225+01	1.839+00	0.5
6h <sub>11/2</sub>	1.103+03	1.075+04	2.997+02	2.191+01	9.913+00	2.503+01	9.034–01	0.1
7h <sub>11/2</sub>	8.108+02	1.046+04	3.922+02	6.174+00	9.948+00	2.339+01	6.594–01	0.5
8h <sub>11/2</sub>	6.208+02	8.239+03	1.765+02	4.515+01	1.364+01	1.813+01	1.069+00	0.1
9h <sub>11/2</sub>	4.905+02	8.109+03	1.788+02	2.830+01	1.389+01	1.805+01	1.025+00	0.3
10h <sub>11/2</sub>	3.973+02	6.414+03	7.317+01	3.805+01	1.552+01	3.302+01	1.928+00	0.2
11h <sub>11/2</sub>	3.284+02	6.345+03	7.400+01	2.589+01	1.562+01	3.289+01	1.901+00	0.3
12h <sub>11/2</sub>	2.759+02	6.293+03	8.956+00	2.128+01	1.654+01	2.373+02	1.264+01	0.2
7i <sub>11/2</sub>	8.108+02	6.827+03	1.389+02	1.760+02	1.298+01	2.599+01	9.651–01	0.1
8i <sub>11/2</sub>	6.208+02	6.638+03	8.229+01	3.377+02	1.569+01	2.669+01	9.262–01	0.2
9i <sub>11/2</sub>	4.905+02	5.242+03	9.048+01	1.564+02	1.582+01	2.707+01	6.786–01	0.6
10i <sub>11/2</sub>	3.973+02	5.149+03	6.719+01	1.321+02	1.774+01	2.553+01	1.759+00	0.1
11i <sub>11/2</sub>	3.284+02	5.080+03	6.903+01	8.424+01	1.790+01	2.537+01	1.734+00	0.1
12i <sub>11/2</sub>	2.759+02	4.029+03	8.069+01	5.362+01	1.752+01	2.438+01	1.427+00	0.3
7i <sub>13/2</sub>	8.103+02	6.827+03	1.371+02	1.838+02	1.300+01	2.598+01	9.582–01	0.1
8i <sub>13/2</sub>	6.205+02	6.637+03	8.542+01	3.232+02	1.564+01	2.587+01	9.233–01	0.2
9i <sub>13/2</sub>	4.903+02	5.242+03	8.251+01	1.992+02	1.701+01	2.206+01	1.460+00	0.1
10i <sub>13/2</sub>	3.972+02	5.149+03	8.613+01	1.154+02	1.720+01	2.201+01	1.399+00	0.2
11i <sub>13/2</sub>	3.282+02	5.080+03	8.831+01	7.452+01	1.733+01	2.207+01	1.372+00	0.2
12i <sub>13/2</sub>	2.758+02	4.029+03	6.839+01	5.842+01	1.794+01	2.635+01	1.684+00	0.3