About the mass of the compact object in the X-ray binary Her X-1/HZ Her

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For the first time we estimate masses of the components of the X-ray binary Her X-1/HZ Her taking into account non-LTE effects during the formation of the absorption line H_γ. This calculation is conducted in the Roche model on the basis of the observed radial-velocity curve of the HZ Her star [1]. Taking into consideration non-LTE effects during the formation of absorption lines in the spectrum of the optical star, we estimate the masses of the components as $m_x = 1.8M_\odot$ and $m_v = 2.5M_\odot$. The estimated masses of the X-ray pulsar and the optical star obtained in the LTE model are $m_x = 0.85\pm0.15M_\odot$ and $m_v = 1.87\pm0.13M_\odot$, respectively. It is demonstrated that the masses of the components of Her X-1/HZ Her, calculated on the basis of radial velocity curve, cannot be taken as final. We show that, to this aim, one should take into account high frequency variations of absorption line profiles in the spectrum of the optical companion in the non-LTE model; see Ref. [2], for details.

References

[1] A.P. Reynolds, H. Quaintrell, M.D. Still et al. MNRAS, 288, 43 (1997)

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