

## Single Particle Potential and Nucleon Effective Masses in the LOCV formalism

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The momentum dependence single-particle potential (SPP) and nucleonic effective mass of asymmetric nuclear matter are studied in the framework of the lowest order constrained variational (LOCV) method at zero temperature [1]. The Av18 interactions including two-body interactions and Urbana type three-body force (TBF) are considered as the input nucleon-nucleon potential. We investigate the TBF effect on the momentum-dependence of neutron and proton SPP. The isospin splitting and especially its density dependence of the neutron and proton effective masses in neutron-rich nuclear matter are calculated and it is shown that the neutron effective mass is larger than the proton effective mass in our framework. Finally the effect of density dependent effective masses on neutrino emissivity from neutron and Proton branch [2] of modified Urca processes are investigated.

### References

- [1] S. Goudarzi & H. R. Moshfegh, *Phys. Rev. C* 91, 054320 (2015)
- [2] A. Dehghan Niri & H. R. Moshfegh & P. Haensel, *Phys. Rev. C* 93, 045806 (2016)

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