



Nuclear Theory

Periodic Box FHNC calculations of neutron star crustal matter. (I)

[Nicola Bassan](#), [Stefano Fantoni](#), [Kevin E. Schmidt](#)

(Submitted on 15 Jun 2011)

Neutron star crustal matter, whose properties are relevant in many models aimed at explaining observed astrophysical phenomena, has so far always been studied using a mean field approach. In order to check the results obtained in this way, a sensible next step is to make use of a realistic nuclear potential. The present paper extends the periodic-box Fermi HyperNetted Chain method to include longitudinal-isospin dependence of the correlations, making feasible a study of asymmetric crustal matter. Results are presented for the symmetry energy, the low-density neutron star equation of state and the single particle neutron and proton energies.

Comments: 27 pages, submitted to PRC

Subjects: **Nuclear Theory (nucl-th)**; Solar and Stellar Astrophysics (astro-ph.SR)

DOI: [10.1103/PhysRevC.84.035807](https://doi.org/10.1103/PhysRevC.84.035807)

Cite as: [arXiv:1106.2954](https://arxiv.org/abs/1106.2954) [nucl-th]
(or [arXiv:1106.2954v1](https://arxiv.org/abs/1106.2954v1) [nucl-th] for this version)

Submission history

From: Nicola Bassan [[view email](#)]

[v1] Wed, 15 Jun 2011 12:32:22 GMT (460kb)

[Which authors of this paper are endorsers?](#)

Link back to: [arXiv](#), [form interface](#), [contact](#).

Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

Current browse context:

nucl-th

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1106](#)

Change to browse by:

[astro-ph](#)

[astro-ph.SR](#)

References & Citations

- [INSPIRE HEP](#)
([refers to](#) | [cited by](#))
- [NASA ADS](#)

Bookmark([what is this?](#))

