

Nuclear Theory

Collective excitations in the neutron star inner crust

L. Di Gallo, M. Oertel, M. Urban

(Submitted on 21 Jul 2011 (v1), last revised 20 Oct 2011 (this version, v2))

We study the spectrum of collective excitations in the inhomogeneous phases in the neutron star inner crust within a superfluid hydrodynamics approach. Our aim is to describe the whole range of wavelengths, from the long-wavelength limit which can be described by macroscopic approaches and which is crucial for the low-energy part of the spectrum, to wavelengths of the order of the dimensions of the Wigner-Seitz cells, corresponding to the modes usually described in microscopic calculations. As an application, we will discuss the contribution of these collective modes to the specific heat of the "lasagna" phase in comparison with other known contributions.

Comments: 10 pages, 4 figures, v2: one reference added and typos corrected
Subjects: **Nuclear Theory (nucl-th)**; High Energy Astrophysical Phenomena (astro-ph.HE)
Journal reference: Phys.Rev.C.84:045801,2011
DOI: [10.1103/PhysRevC.84.045801](https://doi.org/10.1103/PhysRevC.84.045801)
Cite as: [arXiv:1107.4209](https://arxiv.org/abs/1107.4209) [nucl-th]
(or [arXiv:1107.4209v2](https://arxiv.org/abs/1107.4209v2) [nucl-th] for this version)

Submission history

From: Micaela Oertel [[view email](#)]**[v1]** Thu, 21 Jul 2011 09:30:38 GMT (46kb)**[v2]** Thu, 20 Oct 2011 14:22:04 GMT (66kb)*[Which authors of this paper are endorsers?](#)*

Download:

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

Current browse context:

nucl-th

[< prev](#) | [next >](#)[new](#) | [recent](#) | [1107](#)

Change to browse by:

[astro-ph](#)[astro-ph.HE](#)

References & Citations:

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

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

