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Structure Factors of Neutron Matter

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Accurate modeling of the many-body properties of the neutrinosphere appears important for a correct description of core-collapse supernovae. The neutrinosphere is within the region of validity of pionless effective field theory.

We leverage techniques from lattice field theory to do a direct calculation of the many-body physics from leading-order pionless EFT. We present a calculation of thermodynamic observables and the static structure factors of the neutrinosphere accounting for all sources of uncertainty.

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