

The properties of nuclear matter using chiral interactions

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We calculate the energy per particle of symmetric nuclear matter and pure neutron matter using the many Brueckner-Hartree-Fock approach and employing the Chiral Next-to-next-to next-to leading order (N3LO) nucleon-nucleon (NN) potential, supplemented with various parametrizations of the Chiral Next-to-next-to leading order (N2LO) three-nucleon force. Such combination is able to reproduce several observables of the physics of light nuclei for suitable choices of the parameters entering in the three-nucleon interaction. We find that some of these parametrizations, provide also reasonable values for the observables of nuclear matter at the saturation point.

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