

Effective relativistic mean-field parameterization of the DBHF results

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Microscopic calculations based on the Dirac-Brueckner-Hartree-Fock (DBHF) approach with realistic nucleon-nucleon potential are used to adjust a relativistic mean-field theory (RMFT) parameterization. RMFT allows a clear interpretation of the role of the mesons, especially the isoscalar-scalar σ , the isoscalar-vector ω , the isovector-vector ρ , and the isovector-scalar δ in the equation of state. The new results are compared with several older microscopic approaches that allows an adequate investigation of the main differences between them. Different self-interactions and vector ω - ρ cross-interaction with their effects were examined in order to get a proper reproduction of the new DBHF data. It is shown that inclusion of vector cross-interaction is inevitable for correct description of the predicted nuclear symmetry energy.