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Equations of state of relativistic mean-field models with different parametrisations of density-dependent couplings

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Relativistic mean-field (RMF) models with density dependent (DD) couplings have been used successfully to describe nuclear matter and finite nuclei. They usually assume a dependence of the nucleon-meson couplings on the so-called vector density that is derived from the baryon current. A dependence on other densities, in particular the scalar density, was not really explored although suggested in early introductions of the DD-RMF approach. In this contribution, DD-RMF models, the corresponding equations of state (EoS), and symmetry energies are compared using DD couplings of different functional form and dependence on vector and scalar densities. They are obtained by fitting the same set of nuclear observables. The choice of the dependence changes the EoS and the characteristic nuclear matter parameters. Problems of some of the models are identified.

Type of contribution

Invited talk

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