

Project Title:

Optimization of energy density functional for the finite systems of interacting particles

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A computer programme has been developed on the basis of the covariance method to estimate the statistical errors in the various observable associated with finite nuclei and the nuclear matter calculated within the nuclear mean-field models. Such a computer code is essential to validate a nuclear mean field model and to carry out meaningful comparison of theoretical results with the experimental ones. As a test case, we have used our code to estimate the statistical errors in various nuclear matter quantities, like, energy per nucleon, saturation density, incompressibility coefficient, effective mass, and symmetry energy which are obtained within a relativistic mean field model. The outcomes agrees reasonably well with the ones reported in the published literature. We would like to now start shortly the optimization of relativistic mean field model using various nuclear observables together with some accurately measured properties of the neutron stars. The optimized model will be then used for the error analysis in detail. Now the code is ready to be used for the realistic cases. We shall very soon start using the RICC facility.