

Recent progress in EDF-based methods applied to nuclear properties

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Energy density functional-based methods aim to provide an accurate and universal description of the various nuclear phenomena, opening the possibility to encompass the nuclear chart in an unified approach. Recent advances in this field will be reviewed focusing on nuclear properties, namely the various nuclear structure states offered by the nature:

- Nuclear matter: links with neutron stars, constraints from nuclear observables on the equation of state (symmetry energy, incompressibility) and clusterisation.
- Quantum liquid states: mean free path of nucleons, latest description of nuclear shapes, superheavy elements, driplines predictions, and haloes in medium-mass nuclei.
- Cluster states: conditions of occurrence, prediction of exotic states (linear chain, rings).

Dynamical aspects such as exotic nuclear excitations and radioactive decays shall also be addressed.