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Modified Fayans functional. Constraints on nuclear matter EOS from the ground state properties and isovector response.

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The equation of state (EoS) of neutron-rich matter defines the neutron star properties and structure of finite nuclei via the density dependence of symmetry energy. This calls for simultaneous description of both nuclear ground state characteristics, collective nuclear responses to external fields and mass-radii dependence for neutron stars within universal nuclear energy density functional. A possibility to comply the calculations with experimental nuclear data on the charge radii, dipole polarizability, beta decay rates etc. as well as new data on the neutron star masses is studied in terms of modified Fayans functional .

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