Abstract Submitted
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Nuclear Equation of State at Supernuclear Densities.[1] JIRINA STONE, Physics Division, ORNL — The density and temperature dependence of the energy per particle of a system (the Equation of State (EoS)) is a fundamental ingredient of all models of nuclear matter and stars. As nucleons and leptons form the main components of all stars, the best possible description of the strong and weak interactions amongst these particles is essential for a correct understanding of birth, life and death of stars. At supernuclear densities, the presence of strange baryons and/or partialy deconfined quarks is energetically favorable. We review recent development in EoS models in the high density region, based on selected relativisitic mean field and quark models. These EoS shed new light on the density dependence of the phase transition between pure nuclear uniform matter and matter containing strange baryons and deconfined quarks. Application of these EoS to neutron star models (assuming general beta-equilibrium) and to core-collapse supernova models (non-equilibrium matter) will be discussed.

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