Nuclear Matter and Giant Resonance Constraints on Models of Nucleon-Nucleon Interaction.

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After more then 50 years of all-out effort by the nuclear physics community, models of the nucleon-nucleon interaction are not well constrained. This situation has a direct effect on determination of the equation of state (EoS) of nuclear matter over a wide range of density and temperature. The EoS is a key input to analysis and interpretation of data from heavy-ion collisions and, at another extreme, to neutron star models.

The constraints available, including volume and symmetry incompressibility of nuclear matter, density dependence of the symmetry energy and neutron star properties, will be discussed in the view of recent data. Results of a consistent application of these constraints to the Skyrme effective nucleon-nucleon interaction and interactions used in relativistic mean field models will the given.