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The neutron star equation of state under new constraints

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Recent constraints from neutron star measurements and nuclear experiments have narrowed the allowed physical regions for the compact stars equation of state (EoS) resulting in some of the well established models being less probable than before. These new constraints include the NICER mass-radius measurement of the object PSR J0740+6620, whereas laboratory experiments like Spectral Pion Ratio by Radioactive Ion Beams (S π RIT Collaboration) and parity-violating asymmetry in the elastic scattering of longitudinally polarized electrons from ²⁰⁸Pb (PREX collaboration) have reported values of the slope of the nuclear symmetry energy at saturation, a quantity strongly correlated to the neutron star radius. In this talk I will review mostly EoS models of hadronic and hybrid stars, and will present the results of a Bayesian Analysis that includes the state-of-the-art astrophysical constraints in order to select the most probable EoS parameters.

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