

Bayesian Modeling of the PSR J0737-3039A Moment of Inertia

Neutron star observations have the potential to strongly constrain models of the nuclear equation of state. In the near future, precise measurements will be made of the moment of inertia for several known neutron stars. The purpose of this work is to make predictions to further constrain the parameters of the dense matter equation of state using these measurements. To this end, we will calculate neutron star moments of inertia for a wide class of equations of state already constrained by many-body theory and empirical data. The neutron star moment of inertia will be derived from numerical solutions of the Tolman- Oppenheimer- Volkov (TOV) equations assuming a symmetric fluid body with corrections for general relativity using a slow-motion approximation. Comparisons were made with a prior determination of the mass of the binary pulsar PSR J0737-3039A.