Contribution ID: **40** Type: **not specified**

Deviation of observable quantities in rapid and slow-rotation approximation of neutron stars

Wednesday 2 October 2024 14:00 (30 minutes)

In the present study, we have extended our earlier investigation of the breakdown of the slow-rotation approximation to fast rotation by taking into consideration a range of EoS models in order to probe the impact of stiffness in the departure of the two dynamical models. We aimed to construct sequences of rigidly rotating equilibrium configurations at various rotation frequencies up to the Keplerian frequency in order to probe the limitations imposed by the mass-sheding limit and the onset of secular axisymmetric instability. We performed the computations to obtain the slow rotating stellar models by an own implementation of the Hartle–Thorne approximation, while for obtaining the fast-rotating models we relied on the rotstar code, which is part of the LORENE library where a multi-domain spectral method is applied to solve the field equations decomposed into a system of five quasi-linear elliptic equations.

Author: BARTA, Dániel (HUN-REN Wigner RCP)

Presenter: BARTA, Dániel (HUN-REN Wigner RCP)