Contribution ID: **91** Type: **Parallel oral presentation**

Physical acceptability of anisotropic compact objects

Thursday 17 November 2022 15:00 (15 minutes)

One of the most used strategies to model compact objects is considering equations of state that outline the most important physical processes among their thermodynamic variables. Perturbation analysis of its physical variables allows discerning between stable and unstable configurations, providing models that could describe observed objects.

In this work, we studied the physical acceptability of relativistic static anisotropic spheres to represent simplified models of neutron stars. The acceptability of a model emerges from geometric and physical restrictions that make it feasible. The implemented models assume a generalized polytropic equation of state, $P = \rho^{1+1/n} + \alpha\rho - \beta$, where P is radial pressure, ρ is energy density, n is the polytrope index, and α, β are constants parameter. The models considered are anisotropic, i.e. unequal radial and tangential stresses introduced using heuristic methods. As a result, we identified the parameter space region that yielded physically acceptable models. We also propose two pulsar candidates: J0737-3039 and 1518+49. Also, we explore the physical acceptability of configurations with a known density profile and different strategies to introduce anisotropy. This later study allows us to infer which ways of introducing anisotropy are most relevant to the existence of realistic anisotropic models.

Poster fallback option for rejected abstracts for parallel oral presentations

Authors: SUÁREZ URANGO, Daniel Felipe (Universidad Industrial de Santander); Dr HERNÁNDEZ, Héctor (Departamento de Física, Universidad de los Andes); Dr OSPINO, Justo (Departamento de Matemática Aplicada, Instituto Universitario de Física Fundamental y Matemáticas, Universidad de Salamanca); Dr NÚÑEZ, Luis A. (Escuela de Física, Universidad Industrial de Santander)

Presenter: SUÁREZ URANGO, Daniel Felipe (Universidad Industrial de Santander)

Session Classification: Parallel session B

Track Classification: Cosmology and gravitation