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Equation of states in the curved spacetime of compact stars and their effects on tidal deformability

In the study of degenerate compact stars such as neutron stars, general relativistic effects are incorporated by using Tolman-Oppenheimer-Volkoff equations to describe their interior spacetime. However, the equation of states employed in such studies are often computed in flat spacetime. Here, we discuss about the equation of states that are computed in the curved spacetime of these stars. In particular, we discuss about the effects of gravitational time dilation on the mass-radius relation as well as on the tidal deformability of these stars.

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