

PHAROS Conference 2019: the multi-messenger physics and astrophysics of neutron stars



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Differentially rotating neutron stars in alternative theories of gravity

We will present the first numerical models of differentially rotating stars in alternative theories of gravity. More specifically, we will concentrate on a particular class of scalar-tensor theories that is indistinguishable from GR in the weak field regime but can lead to significant deviations when strong fields are considered. We show that the presence of scalar field significantly alters the structure and properties of neutron star models. Our findings can have important implication for the neutron star merger observations and the possibilities to further constrain the scalar-tensor theories of gravity

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