



Contribution ID: 171

Type: **Talk in the parallel session**

Thick brane structures in generalized hybrid metric-Palatini gravity

Wednesday, 7 July 2021 10:50 (20 minutes)

In this work, we study 5-dimensional braneworld scenarios in the scalar-tensor representation of the generalized hybrid metric-Palatini gravitational theory. We start by considering a model for a brane supported purely by the gravitational scalar fields of the theory and then consider other distinct cases where the models are also supported by an additional matter scalar field. We investigate the stability of the gravity sector and show that the models are all robust against small fluctuations of the metric. In particular, in the presence of the additional scalar field, we find that the profile of the gravitational zero mode may be controlled by the parameters of the model, being also capable of developing internal structure.

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Session Classification: Cosmic Strings

Track Classification: Cosmic Strings: Cosmic Strings