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## **Wormhole solutions in beyond Horndeski theories**

A particularly interesting property emerging in Horndeski (and beyond) solutions is the presence of regions with negative effective energy density – this is due to the presence of the higher-curvature gravitational terms in the action and is therefore of purely gravitational nature. This negative effective energy density leads to the violation of both the Weak and the Null Energy Conditions in the near horizon regime. The violation of the energy conditions may allow the emergence of wormhole solutions since it is essential for the creation of the throat. In this work we will present a method to derive analytic traversable wormhole solutions in beyond Horndeski theories. The spacetime of our wormhole solutions is regular over the entire radial regime and does not possess horizons or singularities; thus, our wormholes are traversable. In addition, to construct traversable wormhole solutions with no spacetime singularities beyond the throat, our regular solution over the positive range of the radial coordinate was regularly extended in the negative range in a symmetric way. Finally, for every solution we constructed the isometric embedding diagram and the domain of existence has been studied in detail as well.

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