

Energy Condition Analysis of Rindler-Type Ellis-Bronnikov Wormholes within the Framework of $f(R)$ Modified Gravity

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ABSTRACT

In the extensive exploration of wormholes, theoretical physicists grapple with a persistent challenge—the violation of energy conditions inherent in these cosmic structures. Throughout the trajectory of wormhole research, numerous endeavours have been undertaken to struggle with this issue, producing both successful and unsuccessful outcomes. This article constitutes a specific attempt to address energy condition violations in wormholes by scrutinizing the Rindler-type variant of the Ellis-Bronnikov Wormhole within the framework of $f(R)$ modified gravity. Our study conducts a thorough analysis of energy conditions, involving the calculation and comparison of energy conditions for diverse $f(R)$ models. By concentrating on the Rindler type of Ellis-Bronnikov Wormhole and its interplay with $f(R)$ modified gravity, this research actively contributes to the ongoing collective endeavour of reconciling theoretical predictions with energy condition constraints within the captivating domain of wormhole physics. This exploration not only broadens our understanding of the complex interplay between gravity and wormhole dynamics but also offers insights that may shape future developments in theoretical physics.

Keywords: General relativity, Wormholes, Modified gravity

How to Cite

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