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Flash Talk: Geometry and Stability of Wormholes in Symmetric Teleparallel Gravity with Dark Energy and Rotation Profiles

Monday, 16 November 2026 15:00 (2 minutes)

This work investigates wormhole geometries in the framework of symmetric teleparallel ($f(Q)$) gravity by incorporating holographic and mixed dark energy density profiles. Exact wormhole solutions are obtained using rotational velocity profiles to construct the redshift function and dark energy density profiles to determine the shape function. For suitable parameter choices, the solutions satisfy the flare-out condition and exhibit asymptotically well-behaved geometries. We further analyze the energy conditions, with particular emphasis on the null energy condition (NEC) at the wormhole throat, and demonstrate that the coupling parameter (γ) plays a significant role in governing NEC violation. In addition, the physical properties of the obtained wormholes are explored through the complexity factor, anisotropy, exoticity, and embedding diagrams, highlighting the viability of these solutions in modified gravity.

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