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Galactic Wormholes and Black Holes

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This work explores the environmental influences on wormholes. Specifically, two classes of wormholes are considered: the Damour-Solodukhin and braneworld types. I will discuss the Damour-Solodukhin wormhole at the galactic center. Our results suggest that galactic Damour-Solodukhin wormholes are more stable than isolated ones under linear scalar perturbation. This enables the identification of galactic parameters independently from gravitational wave measurements. Additionally, the impact of the galactic environment on photon spheres, innermost stable circular orbits, and shadow radii is analyzed. Furthermore, the study introduces galactic black holes modeled in pure Lovelock gravity, with implications for gravitational wave observations and Hawking temperature calculations, indicating a quenching effect by the galactic halo.

Primary author: SINGHA, Chiranjeeb (Inter-University Centre for Astronomy and Astrophysics)

Presenter: SINGHA, Chiranjeeb (Inter-University Centre for Astronomy and Astrophysics)

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