
Fluids and fundamental fields as black-hole mimickers

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Abstract

Recent astrophysical observations by the GRAVITY collaboration and the EHT have suggested the existence of black-hole-like objects in the universe. However, black-hole spacetimes are problematic from a mathematical and physical point of view. To overcome this limitation, several alternative compact objects have been proposed, including perfect fluid stars, bosonic stars, Proca stars, fermionic stars, and wormholes. In this talk, we explore the validity of these alternatives by simulating the observational properties of accretion disks and isotropically emitting sources orbiting a central exotic compact object. Specifically, we investigate whether these alternative objects can replicate the observational properties of black-hole spacetimes, namely if they could cast a shadow and how their astrometric properties, e.g. the magnitude and centroid of the observation, compare with the black-hole scenario.

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