

## **Bound orbits near black holes with scalar hair**

*Wednesday, 24 October 2018 10:30 (20)*

We consider spherically symmetric black holes with minimally coupled scalar fields and concentrate our attention on asymptotically flat self-gravitating configurations having the event horizons located at radii much smaller than  $2M$ . We think of such configurations as rigorous mathematical models of the gravitating objects, surrounded by dark matter, at the centres of normal galaxies. In astronomical observations, a key role in distinguishing between black holes, wormholes, and naked singularities plays measuring parameters of bound quasiperiodic timelike orbits, in particular, the location of the innermost stable circular orbit, specific angular momentum of a test particle on it, the angle of precession of periapsis, and the precession rate.

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**Session Classification** : Gravitation and Cosmology