

1118-85-62

Shabnam Beheshti* (s.beheshti@qmul.ac.uk), School of Mathematical Sciences, Queen Mary University of London, London, E1 4NS, United Kingdom, and **Edgar Gasperin Garcia**.

Marginally stable circular orbits in stationary axisymmetric spacetimes.

Marginally stable circular orbits (MSCOs) play an important role in our understanding of astrophysical phenomena, ranging from matter configurations in accretion to motion of test particles/photon orbits around massive neutron stars. We derive a necessary condition for the existence of MSCOs for stationary axisymmetric spacetimes using, unexpectedly, a tool from algebraic geometry; this gives rise to a natural geometric characterization of circular orbits, as well as a concrete algorithm for calculating MSCO conditions. Our discussion will be guided by several concrete examples of physical interest. (Received January 19, 2016)