

Tidal deformation of a binary system induced by a Kerr black hole

Thursday 11 August 2022 17:00 (45 minutes)

Thanks to the next generation of gravitational wave detectors, LISA and ET, that will explore the mHz to 10Hz band, it will be possible to observe signals from extreme mass ratio inspirals (EMRIs) of massive black holes and stars/stellar-mass black holes mergers. If the EMRI system is not isolated and it is influenced by another astrophysical object such as a supermassive black hole, the orbital dynamics and the GW radiation are modified by the gravitational interaction between the binary and the external object. We study the effect of tidal deformations induced by a supermassive Kerr black hole on the dynamics of a binary system with an extreme mass ratio and we derive how the physical quantities, associated to the innermost stable circular orbit (ISCO), shift due to tidal effects.

Presenter: GRIGNANI, Gianluca