



GRAVITY: CHALLENGES BEYOND GENERAL RELATIVITY

Contribution ID: 54

Type: **not specified**

Perturbation of slowly evolving black holes: quasi-normal modes and tidal response

Wednesday, 22 May 2024 16:30 (5 minutes)

The mass of a black hole can dynamically evolve due to various physical processes beyond vacuum General Relativity, such as accretion, Hawking radiation, superradiance or gravitational wave backreaction. This evolution can have a significant impact on astrophysical observables like the inspiral or ringdown signal. An effective description of a spherically symmetric evolving black hole is provided by the Vaidya metric. In our investigation, we explore the dynamics of perturbations on this background, assuming a slow evolution. This approach enables us to expand relevant physical quantities around their static values and compute corrections at leading order in the mass derivative. In particular, we quantify how this phenomenon affects the spectrum of the quasi-normal modes and the tidal response

Primary authors: BARAUSSE, Enrico; CAPUANO, Lodovico (SISSA); SANTONI, Luca

Presenter: CAPUANO, Lodovico (SISSA)

Session Classification: Gongshow