ID de Contribution: **1** Type: **In person talk**

The imprint of gas on gravitational waves from LISA intermediate-mass black hole binaries

mercredi 23 novembre 2022 16:45 (15 minutes)

We study the effect of torques on circular inspirals of intermediate-mass black hole binaries (IMBHBs) embedded in gas discs, wherein both BH masses are in the range 10^2-10^5~MSun, up to redshift z = 10. We focus on how torques impact the detected gravitational wave (GW) waveform in the Laser Interferometer Space Antenna (LISA) frequency band when the binary separation is within a few hundred Schwarzschild radii. Critically, the torques depend on the gas disc properties and whether the binary carves a gap or cavity in the disc. I will discuss how gas torques can lead to a substantial change in the inspiral or a negligible one, depending on the gas properties, and how this effect may arise in GW parameter estimation as a uniquely 'time-dependent' chirp mass. These sources may originate from gas-embedded merging BH seeds or dwarf galaxies, providing a possible probe of their environmental conditions at various redshifts.

Auteurs principaux: GARG, Mudit (University of Zurich); DERDZINSKI, Andrea; ZWICK, Lorenz; CAPELO, Pedro R.; MAYER, Lucio

Orateur: GARG, Mudit (University of Zurich)

Classification de Session: Conference session 1