Seminário, Terça 11/07/2023 14:00h Extra

Local: (Exceptionalmente) mini-Auditorio Pi (ao lado do auditorio) - DRCC

Lucas Martins Barreto Alves (Columbia University)

Title: Determining the Hubble Constant with AGN-assisted Black Hole Mergers

Abstract:
Gravitational waves from neutron star mergers have long been considered a promising way to measure the Hubble constant, H0, which describes the local expansion rate of the Universe. While black hole mergers are more abundantly observed, their expected lack of electromagnetic emission and poor gravitational-wave localization make them less well suited for measuring H0. Black hole mergers within the disks of Active Galactic Nuclei (AGN) could be an exception.
Accretion from the AGN disk may produce an electromagnetic signal, pointing observers to the host galaxy. Alternatively, the low number density of AGNs could help identify the host galaxy of 1–5% of mergers. Here we show that black hole mergers in AGN disks may be the most sensitive way to determine H0 with gravitational waves. If 1% of LIGO's observations occur in AGN disks with identified host galaxies, we could measure H0 with 1% uncertainty within five years, likely beyond the sensitivity of neutrons star mergers.

Based on https://arxiv.org/abs/2009.13739