Type: Talk

Unravelling the nature of intermediate-mass black holes with ET and 3rd generation detectors

Tuesday 27 May 2025 11:42 (12 minutes)

Intermediate-mass black holes (IMBHs) are elusive objects that may link stellar mass and supermassive BHs. Scarce observational evidence and theoretical uncertainties make IMBH mysterious objects whose nature represents an open question of modern astrophysics. If IMBHs form, as supported by the theoretical panorama, through interactions and collisions of stars and stellar BHs, they could be detected as intermediate-mass ratio inspirals (IMRIs) with future detectors. In this talk, I present a model simulating the formation of stellar BH binary mergers (BBHs) and IMBHs in different environments. We set the model parameters to reproduce the properties of currently observed BBHs and obtain a reliable population of IMRIs. We then characterise the detection prospects of such IMRIs with ET, LISA, and the LGWA, showing how a synergy among these detectors could constrain the nature of IMBHs.

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Track Classification: Observational Science (OSB): Div5