

Third Gravi-Gamma Workshop: The multimessenger view of the black hole life cycle



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Constraining the black hole population with Gravitational Waves

Wednesday, 5 October 2022 11:00 (30 minutes)

Starting with the first detection of gravitational waves (GWs) in September 2015, a total of 90 compact binary coalescences (CBCs) have been detected so far by Advanced LIGO and Advanced Virgo, including mergers between BHs, NSs and mixed NS-BHs. These GW observations allowed us to infer some properties of the NS and BH populations, such as the mass and spin distributions and the merger rates: these are key ingredients to better understand the physics of binary mergers and the origin of these systems. In the next years we expect to have more GW detections of CBCs, thanks to the increasing sensitivity of GW detectors, and future GW observations will be crucial to get more insights on the population of binary compact objects.

In this talk I will review some recent results and summarize the astrophysical interpretation of the population properties inferred through GW observations, with focus on the BH population; I will also discuss what we expect to learn from future GW discoveries.

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Session Classification: Stellar and Intermediate black holes