

Massive black hole binaries in the era of multimessenger astronomy

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Following detection by LIGO and Virgo, gravitational wave (GW) stocks are on the rise. Despite their outstanding capabilities, ground based detectors are only sensitive to GW sources in the audio band. Conversely, the low frequency GW Universe, from nHz to mHz, is the exploration playground of future spaceborne interferometers such as the Laser Interferometer Space Antenna (LISA) and ongoing and future pulsar timing arrays (PTAs). In particular, massive black hole binaries (MBHBs) forming in the aftermath of galaxy mergers are expected to be the loudest low frequency sources in the GW universe, and possibly bright in the electromagnetic (EM) spectrum. In fact, the recent evidence of a GW signal reported by PTAs around the world is likely due to a cosmic population of these objects. I will discuss the recent PTA results, the expected joint GW and EM emission of MBHBs and future opportunities for multimessenger observations with LISA and PTA and future EM facilities such as LSST, SKA, Athena.

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