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Challenges in data analysis for space-borne gravitational wave missions

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LISA, Taiji, and TianQin are scheduled to observe milli-Hz gravitational waves (GWs) in space. Their target sources include massive black hole binary (MBHB) coalescences, galactic binaries, extreme mass ratio inspirals, and astrophysical and cosmological stochastic gravitational wave backgrounds. Observing MBHBs with high signal-to-noise ratio will provide unprecedented opportunities to test General Relativity, study the formation and evolution of galaxies, and measure the cosmological constant, etc. However, these opportunities also come with challenges, particularly in the analysis, which requires modeling GW signals with high accuracy. In this presentation, I will report our recent efforts in simulating and analyzing GWs from MBHB coalescences, and discuss potential challenges in the data analysis for space-borne GW missions.

Collaboration (if any)

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