



Contribution ID: 289

Type: **Talk in a parallel session**

Micro-Hertz Gravitational Waves (0.1-100 μ Hz): Overview of Sources and Detection Methods

Tuesday, 9 July 2024 15:00 (25 minutes)

Micro-Hertz Gravitational Waves (0.1-100 μ Hz): Overview of Sources and Detection Methods

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The micro-Hz GW (Gravitational Wave) band, ranging from 0.1 to 100 μ Hz, occupies a crucial intermediate gap between the PTA (Pulsar Timing Array) GW detection band (0.03–100 nHz) and the sensitive bands of space missions like LISA/Taiji/TianQin (0.1 mHz–1 Hz). This frequency range is abundant with potential GW sources. The primary scientific objectives within this band include the detection of GWs from supermassive BH (Black Hole) binary inspiral and coalescence events spanning masses of 10^5 - 10^{10} solar masses, as well as GWs emitted during the inspiral phase of intermediate-mass BH coalescence and intermediate BH binaries falling into supermassive BHs. Detection of micro-Hz GWs will provide opportunities to study the BH co-evolution with the galaxies, to test general relativity and beyond-the Standard-Model theories, to explore the micro-Hz stochastic GW background and so on. Great advances in both scientific goals and detection methods have accumulated since MG16. We here give an overview for this parallel session.

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Session Classification: Micro-Hertz gravitational waves (0.1-100 μ Hz): sources and detection methods

Track Classification: Gravitational Waves (GW): Micro-Hertz gravitational waves (0.1-100 μ Hz): sources and detection methods