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Stochastic Gravitational Waves: Windows to the Unknowns

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Within the first two years of operation, advanced LIGO detected at least five compact binary coalescences, marking an exciting beginning of Gravitational Wave (GW) Astronomy. While the first detected sources received enormous attention, lot more is expected from GW Astronomy, including the possibility to detect unknown sources. Searches for unmodeled or stochastic sources are designed for this purpose. On the one hand, they can constrain gross physical properties of an ensemble of distant sources, boosting our understanding of formation, evolution and distribution of these "known" astrophysical objects, and on the other hand, they provide the only feasible means to search for persistent unknown sources. A network of current and next-generation ground-based GW detectors will have a crucial role to play in this endeavour. Several other present and future experiments aim to probe the stochastic GW, spanning a wide range of frequency bands, with the ultimate goal to observe and characterise the primordial stochastic background.



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