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Digging deeper: Removal of astrophysical foreground from black hole and neutron star binaries to reveal the cosmological background

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In addition to the loud and nearby sources of gravitational waves from black hole-black hole or neutron star-neutron star binaries that are seen as isolated transient events, there is a population of weak, unresolved sources at higher redshifts. The superposition of these sources is expected to be the main contributor to the astrophysical stochastic background which may be detected in the next few years as the Advanced LIGO and Virgo detectors reach their design sensitivity. The astrophysical background contains a wealth of information about the history and evolution of point sources but it is a confusion background that obscures the observation of the primordial gravitational-wave background produced during the early stages of the Universe. In this talk, I will discuss the possibility of subtracting the astrophysical background with the third generation ground based detectors, such as the Einstein Telescope and Cosmic Explorer in order to observe the primordial background.

Primary authors: SACHDEV, Surabhi (Penn State University); Prof. REGIMBAU, Tania (Laboratoire D'annecy Le Vieux De Physique Des Particules); Prof. SATHYAPRAKASH, Bangalore (Penn State University)

Presenter: SACHDEV, Surabhi (Penn State University)

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