

Stochastic gravitational waves background and its anisotropies

Friday, 14 June 2019 12:00 (25 minutes)

The direct detections of Gravitational Waves (GWs) by the Advanced LIGO and Advanced Virgo interferometers have opened a new era of astronomy. Aside the current detections associated with individual loud events, one expects a superposition of coincident unresolved events leading to a stochastic GW background (SGWB). After reviewing briefly the SGWB, I will discuss how the anisotropic distribution of sources and the inhomogeneous geometry of the intervening spacetime can induce anisotropies. I will consider a SGWB produced by (1) cosmic strings and (2) by compact binary coalescences. I will show that while the SGWB monopole is sensitive to the particular model one uses, the anisotropic angular power spectrum is basically insensitive to the cosmic string model or the nature of binary black holes population. I will then discuss the noise in the anisotropies of the astrophysical GW background sourced by the finite sampling of both the galaxy distribution and the compact binary coalescence event rate.

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