

Windows to the early universe: PBH and GW

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Despite the stringent constraints on the primordial power spectra from the Cosmic Microwave Background (CMB) on large cosmological scales, the dynamics at small scales during the primordial epoch of inflation remain hitherto unconstrained. During inflation, scalar and tensor fluctuations can grow via various interesting mechanisms (e.g. ultra slow-roll) at small scales, leading to peak profiles (with features) in the respective power spectra. In particular, large scalar fluctuations can result in the formation of abundant primordial black holes (PBH) after inflation and can induce large tensor fluctuations, which are realised as a stochastic background of induced gravitational waves (GW). With the tremendous sensitivities proposed by upcoming GW surveys and several bounds on the abundance of PBH over a huge range of masses, it is exciting to analyse relevant inflation models for their predictions for PBH and induced GW. In light of recent advances in this field of research, in this talk I will discuss a specific model of interest for PBH and induced GW and possible 1-loop correction to the scalar power spectrum. Moreover, I will also discuss formation and evolution of PBH and GW in non-standard post-inflationary epochs, which is interesting with the prospect of highly sensitive upcoming GW observations.



*Everyone is invited to
attend*