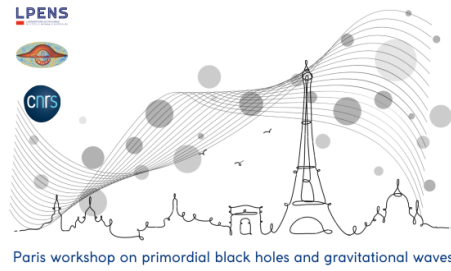


Paris workshop on primordial black holes and gravitational waves



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Enhanced small-scale density fluctuations and loop effects

Monday, 27 November 2023 15:10 (20 minutes)

The possibility that density fluctuations are enhanced on small scales compared to cosmological scales is central to today's cosmology, as they can seed a sizeable amount of stochastic gravitational wave backgrounds and primordial black holes (PBH). Most predictions for such scenarios are made at tree-level in perturbation theory, although loop effects are expected to be important. In this talk, I will first consider an illustrative model where fluctuations are resonantly amplified due to oscillatory features in the inflaton potential, and demonstrate the breakdown of perturbation theory for models that lead to PBH. Second, I will point out the phenomenon of infrared rescattering, through which enhanced tree-level fluctuations lead to a cascade of power on larger scales. Based on 2211.02586 and 2307.08358

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