Primordial Black Holes from Inflationary Sound Speed Resonance

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I will report the recent work from my group on the topic of primordial black holes [1]. In this talk I will briefly review the standard mechanism of generating primordial black holes in the framework of cosmological perturbation theory. Then I will point out the deficit of the standard paradigm and introduce several latest mechanisms of the very early universe models. Afterwards, I will give a detailed description of how to generate primordial black holes in a much efficient way by considering the nonlinear resonance effect due to the sound speed parameter. This theoretical mechanism is promising to be falsified in the future astronomical observations.

Figure 1. Optional. (a) Please ensure the inserted figure(s) have sufficient resolution for printing purpose. (b) 12pt, Justified, CALIBRI.

References:

[1] Y.-F. Cai, X. Tong, D.-G. Wang, S.-F. Yan, Phys. Rev. Lett. 121, 081306 (2018)