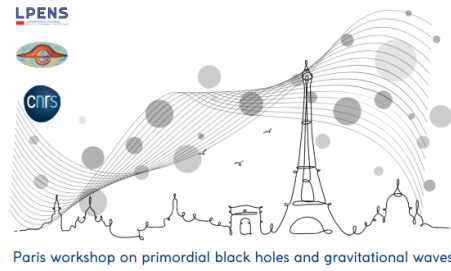


Paris workshop on primordial black holes and gravitational waves



Contribution ID: 6

Type: **not specified**

Signatures of no-scale supergravity in Nanograv and beyond

Wednesday 29 November 2023 11:00 (20 minutes)

In this talk, I am going to present our recent work where we derive a characteristic three-peaked GW signal within the framework of no-scale Supergravity, which arises as a low energy limit of superstring theory. We concentrate on the primordial gravitational wave (GW) spectrum induced due to second-order gravitational interactions by inflationary curvature perturbations as well as by isocurvature energy density perturbations of primordial black holes (PBHs) both amplified due to the presence of an early matter-dominated era (eMD) era before Big Bang Nucleosynthesis (BBN). In particular, we work with inflection-point inflationary potentials naturally realised within Wess-Zumino type no-scale Supergravity and giving rise to the formation of microscopic PBHs triggering an eMD era and evaporating before BBN. Remarkably, we obtain an abundant production of gravitational waves at the frequency ranges of nHz, Hz and kHz and in strong agreement with NANOGrav/PTA GW data. The simultaneous detection of all three nHz, Hz and kHz GW peaks by NANOGrav/PTA, ET/BBO and electromagnetic GW detectors respectively can constitute a clear indication in favor of no-scale Supergravity.

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