NEHOP'25 - New Horizons in Primordial Black Hole Physics



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## Calculation of primordial non-Gaussianity from ultra slow-roll inflation

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The probability of large primordial scalar perturbations (leading to primordial black hole formation and the concurrent GW backgrounds) is sensitive to the tail of the PDF of primordial curvature perturbations. We analyse such tails in inflationary models featuring an ultra slow-roll phase, known to enhance both the amplitude and non-Gaussianity of curvature perturbations at small scales. We first review the computation of the non-Gaussian PDF of primordial curvature perturbations relying on classical non-linear techniques to relate inflaton and curvature perturbations ( $\delta N$  formalism). We then assess the corrections introduced in this calculation by potentially sizeable inflaton self-interactions using field theory techniques (in-in formalism). Finally, we present a systematic procedure to simultaneously account for both sources of primordial non-Gaussianity.

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