Phenomenology 2025 Symposium



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The One-loop Scalar Chemical Potential at the Cosmological Collider

Monday 19 May 2025 18:15 (15 minutes)

We study the one-loop model of a pair of charged scalars with chemical potential mechanism in cosmological collider physics. We evaluate the one-loop amplitude analytically using spectral decomposition in de Sitter. Compared to previous analysis, our result predicts the correct power dependence on scalar masses and the chemical potential for both the signal and the background. Using these results, we further demonstrate that a signal strength $f_{\rm NL} \sim \mathcal{O}(0.01 - 0.1)$ can be obtained in the bispectrum within perturbative regime, which is potentially reachable by the 21 cm tomography.

Mini Symposia (Invited Talks Only)

Plenary (Invited talks only)

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