Contribution ID: **9** Type: **not specified**

Interact or Twist: Cosmological Correlators from Field Redefinitions Revisited

Sunday, 14 December 2025 10:50 (20 minutes)

In cosmology, correlation functions on a late-time boundary can arise from both field redefinitions and bulk interactions, which are usually believed to generate distinct results. In this letter, we propose a counterexample showcasing that correlators from local field redefinitions can be identical to the ones from bulk interactions. In particular, we consider a two-field model in de Sitter space, where the field space gets twisted by field redefinitions to yield a nontrivial reheating surface. We then exploit conformal symmetry to compute the three-point function, and show that the result takes the form of contact correlators with a total-energy singularity. Our finding suggests that in the effective field theory, a class of lower-dimensional operators, which were overlooked previously, may lead to nontrivial signals in cosmological correlators. As an illustration, we apply our result to cosmic inflation and derive a possibly leading signature of the Higgs in the primordial bispectrum.

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Session Classification: Contributed session