



Contribution ID : 343

Type : Oral talk

Three-Point Correlation Functions and Primordial Non-Gaussianity in Horndeski Gravity beyond Leading Order

Thursday, 29 October 2026 17:25 (15)

We investigate primordial correlation functions in a broad class of cosmological models within Horndeski gravity whose background evolution admits a controlled slow-roll expansion. Using the Schwinger–Keldysh (in-in) formalism, we derive the primordial three-point correlation functions in the tensor and mixed scalar–tensor sectors, including slow-roll corrections beyond the leading-order approximation. In particular, to the best of our knowledge, our results provide the first general derivation of the mixed scalar–tensor bispectra beyond leading order in the full Horndeski theory. We further obtain the corresponding non-linearity parameters and spectral indices, thereby providing a systematic characterization of primordial non-Gaussianity in this broad class of theories. We also verify the relevant Maldacena consistency relations in the squeezed limits of the mixed correlators. Besides serving as a nontrivial check of the calculations, this verification establishes that the resulting bispectra satisfy the soft-limit constraints implied by residual diffeomorphism invariance and adiabatic single-clock dynamics. As an application, we consider a non-singular cosmological model describing a bouncing Universe and evaluate the associated non-linearity parameters. The resulting predictions connect the primordial dynamics of non-singular cosmology with potentially observable signatures of non-Gaussianity that may be tested by future cosmological observations.

Primary author(s) : STEPANOV, Maxim (INR RAS)

Presenter(s) : STEPANOV, Maxim (INR RAS)

Session Classification : Gravitation and cosmology

Track Classification : Gravitation and cosmology