

Analytical methods and results for inflation correlators

Friday, 2 June 2023 15:30 (25 minutes)

Inflation correlators encode ultra-high-energy physics at the inflation scale and are promising targets for future cosmological observations. Theory-wise, these objects are boundary correlators of bulk dS quantum fields, which play crucial roles in our understanding of QFT in dS. However, the analytical computation of dS correlators is notoriously difficult, and significant progress has been made only in recent years. In this talk, I shall introduce our recent efforts in understanding and computing inflation correlators. I shall describe new analytical tools we have developed, including the partial Mellin-Barnes representation, the bootstrap equations, and the spectral decomposition. I shall also present new results and insights we obtained with these techniques, including exact and analytical expressions for a wide range of inflation correlators at both tree and 1-loop levels, a 1-loop factorization theorem, the cutting rule, and the boundary OPE.

Primary author: XIANYU, Zhong-Zhi (Tsinghua University)

Presenter: XIANYU, Zhong-Zhi (Tsinghua University)

Session Classification: Cosmo