



Contribution ID: 71

Type: **not specified**

Primordial features and non-Gaussianities as probes of fundamental physics

Tuesday 20 July 2021 15:00 (1h 20m)

During the primordial universe such as the inflationary epoch, all particles with mass up to the Hubble parameter or higher are excited quantum-mechanically or classically. These particles left their imprints in the primordial density perturbations, as primordial features and non-Gaussianities, which may be probed by astrophysical observations of the large-scale structure of the universe today. These informations include the particle mass and spin spectra, and the scale factor evolutionary history $a(t)$ of the primordial universe. The latter would provide a direct evidence for the inflation or an alternative scenario. As an example, we present an inflationary primordial feature model that can explain both the large and small-scale feature anomalies in the currently measured CMB anisotropy spectra, revealing a clip of adventurous history of the Universe during its primordial epoch and realizing some of the properties outlined above. We show how to further test such models in future experiments.

Presenter: Prof. CHEN, Xingang (Harvard, CfA)