IOA Seminar

Resonances in the very early universe

Date 13:00 - 14:30, April 18 (Monday), 2022

Place 1130, Building 9 (Zoom ID: 881 5903 1592)

Speaker

蔡一夫 教授（Prof. Yifu Cai）

中国科技大学

University of Science and Technology of China (USTC)

Abstract

Primordial black holes (PBHs) are widely considered as a hypothetical candidate of dark matter. However, the formation and astrophysical effects of PBHs still remain unclear. To gain the insights from the theoretical perspective, we recently proposed a novel mechanism of the sound speed resonance (SSR) cosmology that produces PBHs efficiently. I will briefly review the PBHs and the SSR mechanism and summarize what we have learned in this subject so far. I will also introduce recent works on the application of the resonances in the very early universe into primordial and stochastic gravitational waves which are expected to be some new probes for new physics in the early universe.

Biography

Prof. Yi-Fu Cai is a professor of physics and astronomy at the University of Science and Technology of China (USTC). He received the PhD degree in theoretical physics at the Institute of High Energy Physics in 2010. He worked as a postdoc at Arizona State University and McGill University until 2015. He was selected into the Chinese National Youth Talents Program in 2015 and became a faculty at USTC. His particle cosmology group at USTC is responsible for the scientific goals of the AliCPT project associated with cosmological models. His research focuses on fundamental questions for cosmology, namely, the big bang singularity, the origin and destiny of the universe, the cosmological perturbation theory and the CMB theory.