

第 75 回 RESCEU コロキウム



東京大学大学院理学系研究科 附属ビッグバン宇宙国際研究センター

日 時: 2026 年 6 月 4 日(金) 13:30 ~ 15:00

場 所: 理学部 4 号館 1 階ピロティ RESCEU セミナー室

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Cosmology with Galaxy Shapes: Intrinsic Alignments as a Probe of Fundamental Physics

Abstract

Galaxies in the Universe are not oriented randomly. Their shapes exhibit coherent alignments across cosmological scales due to the surrounding tidal gravitational field. For many years, these intrinsic alignments were regarded mainly as a contaminating effect in weak gravitational lensing observations. In recent years, however, they have emerged as a new cosmological probe, complementary to conventional galaxy-clustering analyses. In this talk, I will review recent theoretical and observational developments that establish galaxy shapes as a tool for studying the growth of cosmic structure and testing gravity on cosmological scales. I will present the first measurements demonstrating that intrinsic galaxy alignments can constrain cosmological parameters directly from observational data. The results are consistent with general relativity and provide information complementary to traditional galaxy-clustering analyses. I will also discuss future prospects for using galaxy alignments to probe dark energy, modified gravity, gravitational waves, and the physics of the early Universe with next-generation galaxy surveys.

興味をお持ちの方の聴講を歓迎致します。