

## Galaxy shape/alignment statistics as a novel cosmological probe

*Wednesday, 6 March 2024 15:00 (40 minutes)*

Mapping the large-scale structure of the universe with galaxy surveys is one of the main science drivers for cosmology. So far, most of the analysis has been made with the galaxy positional information, ignoring the individual shapes and orientations. In this talk, we consider the galaxy intrinsic orientation (intrinsic alignment, IA) as a novel probe, and show that the spatial correlation of the IAs is beneficial to tighten cosmological constraints. Precision modeling of the IA statistics is thus very important, and we will present an improved model of the IA power spectrum, which properly takes into account the nonlinear effects of gravity and redshift-space distortions based on perturbation theory.

**Presenter:** TARUYA, Atsushi

**Session Classification:** Chair: Ken Osato