

Environmental dependence of properties of galaxies in Galaxy and Mass Assembly (GAMA) survey and its evolution using Marked statistics

Observed galaxies trace an underlying network of gravitationally dominant dark matter; we know however that they trace it in a biased way, and that this bias depends on galaxy properties. In many studies galaxy luminosity and/or galaxy stellar mass is used as a convenient (even if also biased) proxy of its host dark matter halo; in the same time it was also observed that clustering of luminosity-selected and stellar mass-selected samples is not identical, especially at higher redshifts (see Marulli et al. 2013; Durkalec et al. 2018), and these differences are quite complex. We use marked correlation function as a tool to study small-scale galaxy clustering weighted by these two properties. We present our first results from the study of the dependence of galaxy clustering on luminosity and stellar mass in the redshift range $0.1 < z < 0.5$ using 54262 galaxies from the Galaxy And Mass Assembly (GAMA) survey, covering a total area of 180 sq. deg. We measure the real space luminosity-marked and stellar mass-marked correlation functions for a set of volume-limited subsamples selected by the absolute magnitude and stellar mass. We present the results of a comparative study of both the properties with the aim to show how these two properties trace dark matter halo mass and local density field.

Session

Dark Matter and Dark Energy in Astronomical Measurements

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