



Contribution ID: 17

Type: **not specified**

The LIGER method: light-cone using GR

Tuesday 23 October 2018 12:40 (30 minutes)

We introduce a method to create mock galaxy catalogs in redshift space including all general relativistic effects to linear order in the cosmological perturbations. We dub our method LIGER, a short for ‘light cones with general relativity’. LIGER takes a (N-body or hydrodynamic) Newtonian simulation as an input and outputs the distribution of galaxies in comoving redshift space. This result is achieved making use of a coordinate transformation and simultaneously accounting for lensing magnification. The calculation includes both local corrections and terms that have been integrated along the line of sight. Our fast implementation allows the production of many realizations that can be used to forecast the performance of forthcoming wide-angle surveys and to estimate the covariance matrix of the observables. To facilitate this use, we also present a variant of LIGER designed for large-volume simulations with low mass resolution. In this case, the galaxy distribution on large scales is obtained biasing the matter-density field. Finally, we present two sample applications of LIGER. First, we discuss the impact of magnification bias onto the angular clustering of galaxies in a Euclid-like survey. Second, we show that Doppler redshift-space distortions beyond the standard Kaiser effect can be detected with high statistical significance using the completed Square Kilometre Array.

Presenter: BERTACCA, Daniele (Dipartimento di Fisica e Astronomia “Galileo Galilei” Università degli Studi di Padova via Marzolo 8, I-35131 Padova, Italy)

Session Classification: Morning session