

Galaxy - Dark matter connection in cosmology

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While the large scale structures formation is dominated by Cold Dark Matter (CDM) field evolution, we generally have only access to baryonic tracer like galaxies. In particular, Mexico is involved in three of the most important galaxy surveys of next decade: DESI, SDSS-V and LSST. The usual method is to link the galaxy distribution to the CDM density field using a linear bias. We propose to use a luminosity-based methodology in order improve this mapping in order enhance the galaxy-CDM connection using different galaxy tracers. Moreover, I will present how this methodology can improve the standard reconstruction method which allows to enhance the Baryonic Acoustic Oscillation Peak position, one of the most important probe for the cosmic expansion acceleration.

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