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Tomography-based observational determination of the abundance of dark matter halos using the submillimeter galaxy magnification bias

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Within the standard paradigm of cosmology, the hierarchical growth of dark matter perturbations is an essential assumption to explain galaxy formation. As a consequence, the relevance of dark matter halos for probing large-scale structure has motivated the search for a quantitative understanding of their abundance. Although computational cosmology has so far been the main arena for determining the number density of halos, numerical simulations are subject to systematic differences regarding, for instance, the modelling of baryon physics. In this talk, a method is presented to pursue the objective of determining the halo mass function through the observation of the weak lensing magnification bias effect on high-redshift submillimeter galaxies, given the suitability of these sources for a study of this kind. A tomographic approach is adopted in order to look for differences in the results obtained in a non-tomographic analysis. We obtain a remarkable improvement regarding uncertainties with respect to the non-tomographic case and predict a higher number density of halos below 10ˆ13 M_{\odot}/h and a lower one above 10ˆ14 M_{\odot}/h, in disagreement with standard N-body results at 2 OR 3\sigma, depending on the exact model.

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