Contribution ID: **41** Type: **not specified**

N-body lensed CMB maps: lensing extraction and characterization

Thursday, 18 September 2014 14:30 (1 hour)

After multiple high precision detections (ACT, SPT, Planck) gravitational lensing has become a new source of relevant cosmological information: combining it with other probes (e.g. the large scale structure) can give significant insight on the evolution of the Dark Energy component. Developing new algorithms of estimate of this signal will allow the community to exploit this observable as a new and independent probe in cosmology.

In my talk I will present the reconstruction of the lensing shear pattern and its angular power spectrum from total intensity and polarised CMB maps obtained using Born approximated ray-tracing through N-body simulated structures.The recovered spectra are in agreement with predictions of the underlying ΛCDM with no visible bias, on a scale interval which extends from the arcminute to several degrees over the sky. This demonstrates the feasibility of CMB lensing studies based on large scale simulations of cosmological structure formation in the context of the upcoming large observational campaigns. First results on the extraction of the lensing spectrum from CMB maps lensed by N-body simulations with massive neutrinos will also be discussed.

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