



Contribution ID: 144

Type: **not specified**

## **CMB Anomalies From Next Generation Polarization Measurements**

*Wednesday, April 26, 2017 5:00 PM (15 minutes)*

Measurements by WMAP and Planck have indicated nearly a  $3\sigma$  departure from statistical isotropy in the temperature field of cosmic microwave background (CMB) at large scales, which is popularly known as Hemispherical Asymmetry. Such an anomalous signal is beyond the standard LCDM cosmological model and can lead to important consequences on cosmological parameters. Cosmological origin of hemispherical asymmetry must leave its imprints on the matter distribution of the Universe at large scales. We demonstrate that weak lensing of the CMB due to statistical isotropy violated density field produces an imprint on the CMB B-mode at small angular scales. Measurability of this phenomenon can confirm its cosmological origin from scalar perturbations and can impose an independent bound on the scale dependence of the hemispherical asymmetry. Next generation CMB missions can validate this effect from small-scale B-mode polarization and can shed light to this decade long enigma.

References: Phys. Rev. Lett. 116, 221301 (2016), JCAP 09 (2016) 029.

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**Session Classification:** Afternoon session