B mode from Space – Part 1: The Science goals, status of spaceborne projects, foregrounds (Dec 10 -12), Part 2: Mission design, technologies and challenges for the spaceborne observations (Dec 14 -16) –

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Development and Fabrication of the Lenslet Coupled Sinuous Antenna TES Bolometer Arrays for the LiteBIRD Low and Mid Frequency Focal planes Ben Westbrook (UCB)

Wednesday 16 December 2015 09:45 (25 minutes)

We discuss one of the two candidate detector technologies for the LiteBIRD satellite mission: lenslet-coupled sinuous antenna transition edge sensor (TES) detector arrays. We discuss the current status and future challenges for the design, fabrication, and characterization of this technology for the LiteBIRD low and mid frequency (LF and MF, respectively) focal planes. These design of these devices was developed by UC Berekeley and the first LiteBIRD LF prototype detectors were recently fabricated there as well. In addition to the development of this technology for LiteBIRD, both the POLARBEAR-2 and SPT-3G collaborations will deploy focal planes composed of multi-chroic lenslet coupled sinuous antenna detectors in the next year and half. Despite the strong legacy of these detectors there exists many challenges to reliably engineer these devices for a satellite mission. The focus of this talk will be on building a robust and repeatable fabrication process, the tailoring of these detectors for lower optical loading, and accurately tuning the bands (including notch filters to avoid CO lines) to meet the specifications of the LiteBIRD mission. In addition to these tasks we will report on a study of the effects of high energy cosmic rays we expect in a space environment on the performance of this technology.

Presenter: Dr WESTBROOK, Ben Session Classification: Detector