

Calibration using Sparse Wire Grid

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A calibration for polarization responses (i.e. angle and gain) is an important subject for success of CMB polarization experiments. We (I and my colleagues) have developed calibration systems using sparse wire grid. Wires in ambient make a blackbody signal which is linearly polarized. Focal plane detectors measure the polarization signal when we set the wires in front of receiver or telescope aperture. The direction of polarization is parallel to the wire direction, and its intensity is proportional to the wire density. Thus far, this type calibration has been demonstrated in QUIET, ABS, POLARBEAR, and Simons Array experiments. In future, Small Aperture Telescopes in the Simons Observatory will regularly use this type calibrator towards the best systematic error control to date. In this presentation, I will review ideas/systems/experiences for each experiment.

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