

Antenna coupled TES bolometers for BICEP-2 and 3, Keck Array, and SPIDER.

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Abstract— At NASA-JPL and Caltech, we have been developing antenna array coupled TES bolometers in anticipation of a next generation Cosmic Microwave Background (CMB) satellite mission, and have deployed these detectors to a variety of suborbital experiments to verify this readiness. BICEP-2 and Keck Array have used these detectors to form some of the deepest maps (57 nK-deg) of the CMB's polarization at 150GHz. We have recently upgraded Keck Array to diversify our observed colors to include 1024 220GHz detector (for 2015 observing season) and 576 detectors at 95GHz (for 2014-15 observing seasons). We have deployed the 95GHz BICEP-3 telescope to the South Pole Station and recently started observations (2015) with 1152 detectors and we will upgrade this in 2016 for a total of 2560. SPIDER flew for a 17 day Antarctic flight in 2016 with 864 95GHz detectors and 1536 150GHz detectors. I will report on the status of this technology, these recent deployments, and extensions into additional frequency channels currently under development.