



The Keck Array: 220 GHz Upgrade and on Sky Performance

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The Keck Array, a continuation of the BICEP and BICEP2 program, is a CMB polarization experiment consisting of an array of five telescopes operating at millimeter wavelengths, each of the same optical design of BICEP2. Each camera supports a focal plane of 512 antenna-coupled polarization-sensitive transition-edge sensor (TES) bolometers. Measurements at 150 GHz from BICEP2 and Keck Array combined with multi-frequency Planck data have produced sensitive measurements of degree-scale CMB polarization, with a high significance detection of gravitational lensing. As the current upper limits on polarization from inflationary gravitational waves from this program are limited by sensitivity to Galactic dust, multi-band observations are necessary to progress to deeper measurements of inflationary polarization. We installed two telescopes for the Keck Array operating at 220 GHz in early calendar 2015, which have been observing during the current winter season. We will report on their performance, which portend deep polarization measurements appropriate for Galactic dust measurements from a ground-based site. We continue to upgrade our multi-band performance, and have developed new designs optimized for improved dust sensitivity including broad-band and diplexed antennas covering the 200-300 GHz window. I will give an overview of the performance of the fielded detectors as well as progress on the development of new devices.