



Technological Developments and Initial Observations from BICEP3: a 95GHz CMB polarimeter

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BICEP3 is a new 95GHz receiver in the BICEP/Keck Array series of inflationary probes at the South Pole sensitive to the Cosmic Microwave Background (CMB) polarization at degree-angular scales. It was commissioned at the South Pole during the 2014-2015 austral summer and saw first light February 2015. BICEP3 advances per-receiver sensitivity, while maintaining the advantages of a compact refractor with degree-angular resolution. BICEP3 doubles the aperture of BICEP2/Keck receivers, has faster optics, and can house 1280 dual-polarization pixels on its focal plane, 5x more than a single BICEP2/Keck Array receiver. In this talk, I will discuss the technological developments we have undertaken to build BICEP3: implementation of large area metal mesh filters to reduce infrared loading, use of alumina as absorptive filters and lenses reducing optical loading, and modularization of detectors for scalability. I will also give an overview of the current observation and projections of multi-frequency map depths and constraints on r and dust amplitudes from the BICEP/Keck Array program.