



LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS (LEPP)

Joint Experimental and Theory Seminar in Particle Physics and Cosmology:

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Measuring CMB Polarization with ACTPol and PIPER



Measurement of the faint polarized signals of the Cosmic Microwave Background (CMB) provides a unique window into the physics of inflation, a measurement of the neutrino mass sum, and enables a multitude of other astrophysical studies. Utilizing new dichroic detector arrays, the Atacama Cosmology Telescope (ACT) has been mapping approximately half the sky with improved sensitivity to make arcminute resolution measurements of CMB polarization, CMB lensing, and other secondary anisotropies. I will describe some novel technologies that enabled the ACTPol and Advanced ACTPol receivers. In particular, I will discuss my work on the design and characterization of the detectors and optical elements. I will also talk about the Primordial Inflation Polarization ExploreR (PIPER), which is a balloon-borne instrument optimized to measure the polarization of the CMB at large angular scales. I will discuss progress towards its first science flight planned for June 2018 and lessons learned from the 2017 engineering flight.



Friday, February 23, 2018

2:30pm

401 Physical Sciences Bldg.