

## Surveying the Cosmic Microwave Background with ACTPol and the Advanced ACTPol Experiments

The Cosmic Microwave Background (CMB) offers unique windows into the early universe and large scale structure. Upcoming measurements could determine the energy scale of inflation; constrain the nature of dark energy and test for modifications to general relativity; and measure the sum of the neutrino masses for the first time. In this talk, I will give an overview of ACTPol and Advanced ACTPol, two instruments that will yield improved maps of the CMB. ACTPol is the first polarization sensitive receiver deployed on the arc minute resolution Atacama Cosmology Telescope (ACT) in northern Chile. With this instrument we have surveyed the sky for two seasons and a third season is now in progress. I will give a brief overview of this instrument, describe our published power spectra and lensing results, and highlight the science that will be achieved with the full survey. Advanced ACTPol is an upgraded receiver that will improve upon the sensitivity and greatly expand the frequency coverage of ACTPol beginning in 2016. With Advanced ACTPol we will survey nearly half the sky in five frequency bands. These data will improve our understanding of inflation, neutrino properties, dark energy and a number of other cosmological measurements.