Notre Dame Science
Department of Physics

COSMOLOGY WITH THE SOUTH POLE TELESCOPE

Colloquium

Dr. Christian Reichardt ❖ UC Berkeley

Wednesday, March 21, 2012 ❖ 4:00 P.M. NSH 118

(Refreshments at 3:30 P.M. NSH 202)

The polarization and fine-scale temperature anisotropy of the cosmic microwave background (CMB) is a powerful tool for cosmology, encoding the history of the Universe from inflation to structure formation. Order of magnitude improvements in sensitivity are finally opening up this rich new field, as evidenced by recent 'firsts' from the South Pole Telescope (SPT). These include the first galaxy cluster catalog selected by the Sunyaev-Zel'dovich effect, the first detection of the background of Sunyaev-Zel'dovich effect power from large-scale structure, and the first constraints on the cosmic ionization history at all redshifts. I will discuss what we are finding in the SPT survey, with a focus on what we are learning about dark energy from galaxy clusters. I will also give a status report on the new polarization sensitive camera installed on the SPT in January. I will conclude with the expected science results for this new camera, which include measuring the sum of neutrino masses to 70 meV and possibly detecting gravity waves sourced by inflation.

All interested persons are cordially invited to attend.