"The SPIDER Telescope: Measuring the Oldest Light in the Universe from a Balloon"

Stevie Bergman
Graduate Student, Physics
Princeton University

Date: Friday, October 9, 2015
Time: 4:15 pm
(refreshments at 4:00 pm)
Place: McConnell B15

"The SPIDER Telescope: Measuring the Oldest Light in the Universe from a Balloon"

Our entire universe is bathed in faint, microwave radiation called the cosmic microwave background (CMB). Currently, this radiation is our richest source of information on the evolution and large scale structure of our universe, as it is essentially a snapshot of our universe at the time it was emitted -- over 14 billion years ago. Through decades of effort scientists have carefully mapped the temperature of the CMB. Now, the forefront of observational cosmology is to map the polarization. Incredibly, the patterns in the polarization of the CMB have the capacity to tell us about our universe at a time just moments after the Big Bang.

The SPIDER telescope measures the CMB by cooling polarization-sensitive detectors to less than a degree above absolute zero, then launching those detectors to the edge of space for a 20 day flight in weather balloon above Antarctica. SPIDER’s first flight was last January (2015), and we’re currently analyzing our rich new data set and preparing for a second flight in the next few years.