



PHYSICS AND ASTRONOMY COLLOQUIUM

Dr. Colin Bischoff

Harvard-Smithsonian Center for Astrophysics

“Detection of B-mode Polarization at Degree Angular Scales Using BICEP2”

Abstract

BICEP2 is a Cosmic Microwave Background (CMB) polarimeter designed to search for the signal of gravitational waves from inflation in B-mode polarization at large angular scales. BICEP2 observed from the South Pole for three seasons from 2010--2012 and recently published results showing an excess of B-modes in the range $30 < \ell < 150$ with >5 sigma significance. We find that this excess cannot be explained by instrumental systematics or foreground models; it is confirmed in cross-correlation with BICEP1 (at 100 and 150 GHz) and preliminary data from the Keck Array. The observed BB spectrum is well fit by a lensed-LCDM cosmological model with the addition of primordial tensor fluctuations with tensor-to-scalar ratio $r=0.20^{+0.07}_{-0.05}$. I will discuss the BICEP2 experiment, observations, and data analysis, as well as current and planned efforts to follow up this detection.

Tuesday, April 8, 2014

2:00 p.m.

Bob Wright Centre

A104