
THE DEPARTMENT OF PHYSICS

Presents

Dr. Jeffrey Iuliano

Postdoctoral Researcher, University of Pennsylvania

Cosmic Archeology:

How to see the oldest light in the universe.

The Cosmic Microwave Background (CMB) is the oldest light in the universe; it captures a moment not long after the Big Bang and carries echoes of everything it passed through to reach us today. This rich source of information played a crucial role in the development of modern cosmology, particularly through careful study of anisotropy in the CMB temperature. Today, the frontiers of CMB cosmology lie in making fantastically sensitive measurements of CMB polarization to look for the characteristic patterns imprinted by cosmic inflation and reionization, and in using the CMB as a back-light to study the history and dynamics of the universe with high angular resolution maps.



I will explain the origins of the CMB in the early universe, how the CMB became polarized, and why its study is central to Cosmology. Then, I will turn to how we actually measure these patterns. How does one design and build a modern CMB observatory? What challenges are inherent in this endeavor, and how are they overcome? To answer these questions, I will describe two complementary experiments -- the Cosmology Large Angular Scale Surveyor (CLASS) and Simons Observatory (SO) -- which I am helping to build and operate.

FRIDAY, OCTOBER 29, 12:00 P.M.

MARA AUDITORIUM – MASTERS HALL ROOM 110

Light refreshments will be served