ASU Department of Physics
Arizona State University

COLLOQUIUM

Thursday, October 10, 2024

Refreshments at 3:15pm outside PSF 101
Colloquium from 3:30pm - 4:30pm in PSF 101

Cracking the Challenge of CHIME Calibration

Professor Laura Newburgh

Yale University

Abstract:

Current cosmological measurements have left us with deep questions about our Universe: What caused the expansion of the Universe at the earliest times? How did structure form? What is Dark Energy and does it evolve with time? New experiments like CHIME are poised to address these questions through 3-dimensional maps of structure using the 21cm emission line from neutral hydrogen contained in abundance in galaxies. In this talk, I will describe recent results from the CHIME experiment that show a significant detection of neutral hydrogen in distant galaxies and discuss future directions which require precise calibration of the instrument beam shape. I will describe the latest results of our collaboration's campaign to map the beam with radio holography, including new polarization effects, comparison with other data sets, our validation strategy, and future avenues for these measurements.

Biography:

Laura Newburgh builds instruments to chart the past 13 billion years of cosmic history: measuring the Cosmic Microwave Background with millimetre-wave telescopes and Large Scale Structure with radio telescopes. The resulting data sets will probe the nature of Dark Energy, Dark Matter, the sum of neutrino masses, and cosmic inflation. She is an Assistant Professor of Physics at Yale University.

Host: Prof. Simon Foreman
View our Fall 2024 Physics Colloquium schedule at https://physics.asu.edu/colloquia