

2025 ASTROPHYSICS SEMINAR SERIES

Exploring the High-Redshift Universe with Millimeter-Wave Line Intensity Mapping

Answering outstanding questions in cosmology - such as understanding the nature of inflation, dark energy, and reionization - requires observations of ever-increasing volumes of the universe. In this talk I will discuss a new technique for measuring large volumes at high redshift: line intensity mapping (LIM) of far-IR emission lines. This technique is enabled by advances in millimeter-wave spectrometer technology. I will introduce SPT-SLIM, a pathfinder experiment at the South Pole Telescope that will demonstrate the use of superconducting on-chip spectrometers for LIM. SPT-SLIM targets CO-emitting galaxies from $0.5 < z < 2$. I will then discuss the future of mm-wave LIM and the technical advances needed to develop this technique into a next-generation cosmological observable.

**Monday, March 3rd****2:30 - 3:30 p.m.**

725 Commonwealth Ave | Room 502

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