

UCLA High Energy & Astro-Particle (HEAP) Seminar

“Cosmology and Astrophysics with the Secondary Anisotropies of the Cosmic Microwave Background from South Pole Telescope and Future Surveys”

Presented by Srinivasan Raghunathan
University of Illinois, Urbana-Champaign

Observations of cosmic microwave background (CMB) have played critical role in establishing the standard cosmological paradigm, the six-parameter Lambda Cold Dark Matter (LCDM) model. The properties of free streaming CMB photons from the surface of last scattering are altered by their interaction with the matter in the universe. These interactions give rise to the secondary anisotropies of the CMB, which carry crucial information about the origin, growth, and evolution of structures and subsequently, are remarkable probes of both astrophysics and cosmology. In this talk, I will discuss the potential of a couple of these secondary anisotropies, namely the kinematic and thermal Sunyaev-Zeldovich (SZ) effects, to shed light into some of the long-standing quests in the field of cosmological physics: the physics of the epoch of reionisation, properties of dark energy and neutrinos, and the effect of baryonic feedback. I will also demonstrate the challenges posed by astrophysical foregrounds for the detection of these anisotropies and discuss strategies for mitigating them. I will finish by presenting some of the recent results and ongoing work from the South Pole Telescope on these fronts and discuss the prospects for future CMB surveys like the CMB-S4 experiment.

Location: Knudsen 4-134

Date: Wednesday, November 13, 2024

Time: 12:00pm

UCLA