

Srinivasan Raghunathan – HEP Seminar – April 20, 2021
MSU

Title: “Demystifying the Dark Side of the Universe Using Secondary Cosmic Microwave Background Anisotropies.”

Abstract: Secondary anisotropies of the cosmic microwave background (CMB) are known to be remarkable probes of cosmology. The properties of free streaming CMB photons from the surface of last scattering are altered by their interaction with matter in the universe and hence carry crucial information about the growth of structures in the universe and the epoch of reionisation. In this talk, I will discuss the potential of these secondary anisotropies, namely the thermal and kinematic Sunyaev-Zeldovich (SZ) effects and the gravitational lensing of the CMB, to shed light into some of the long-standing cosmological quests like understanding the properties of dark energy, neutrino masses, and the physics of reionisation. I will also present the challenges posed by astrophysical foregrounds for the detection of these small-scale anisotropies, ways of mitigating them, and the recent efforts carried out in measuring them data from the South Pole Telescope. I will also show the prospects of SZ/lensing science with future surveys like the CMB-S4 experiment.