COLLOQUIUM

Dark Energy and Cosmic Sound

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May 27, 2015

4:00 p.m. (coffee @ 3:30)

Discuss how the acoustic oscillations that propagate in the photon-baryon fluid during the first million years of the Universe provide a robust method for measuring the cosmological distance scale. The distance that the sound can travel can be computed to high precision and creates a signature in the late-time clustering of matter that serves as a standard ruler. Galaxy clustering results from the Sloan Digital Sky Survey reveal this feature, giving geometric distances to a wide range of redshifts and producing an accurate measurement of the abundance of dark energy. I will review our recent work on the theory and practice of the acoustic oscillation method, describe our latest cosmology results form SDSS-III on the expansion history of the Universe, and introduce the upcoming Dark Energy Spectroscopic Instrument (DESI) project.