SAN FRANCISCO STATE UNIVERSITY

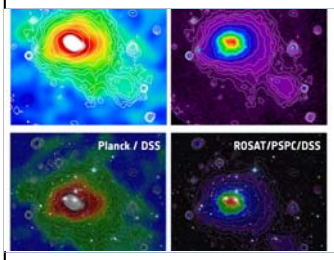
Physics & Astronomy

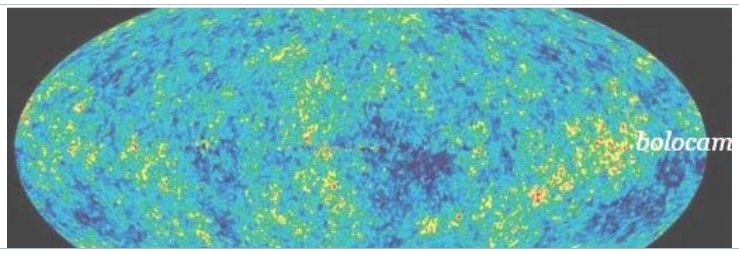
MONDAY, NOVEMBER 17TH

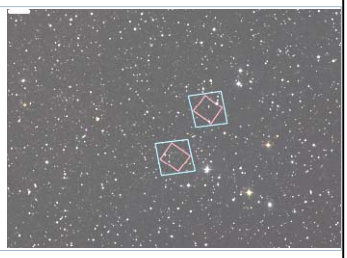
Dr. Jack Sayers
Caltech

4:00 PM in TH 411
Refreshments served at 3:50 PM

A Measurement of the Internal Velocity Structure of the Massive Galaxy Cluster MACS J0717.5 Using the Kinetic Sunyaev-Zel'dovich Effect







Abstract:

The kinetic Sunyaev-Zel'dovich (kSZ) effect is a Doppler shift of the the cosmic microwave background (CMB) radiation when it Compton scatters with electrons, such as those found in the intra-cluster medium of massive galaxy clusters. As a result, kSZ observations provide absolute line of sight velocity information with respect to the CMB. I will present the details of our kSZ observations and analysis, and place our results in context with previous studies of MACS J0717.5. I will also discuss the compatibility of this large line of sight velocity with the standard cosmological model. In addition, I will give a brief history of kSZ observations, and describe future prospects for using the kSZ effect to constrain dark energy and theories of modified gravity, along the dynamics of large scale structure formation.