



SACRAMENTO STATE

Department of Physics & Astronomy Fall 2007

Physics Colloquium Series

"Understanding Cluster Formation and Galaxy Evolution...ORELSE"

I present the motivation, design, and latest results of the Observations of Redshift Evolution in Large Scale Environments (ORELSE) Survey, a systematic search for structure on scales greater than 10 Mpc around 20 known galaxy clusters at redshifts of $z > 0.6$. When complete, the survey will cover nearly 5 square degrees, all targeted at high-density regions, making it complementary and comparable to field surveys such as DEEP2, GOODS, and COSMOS. For the survey, we are using the LFC and WIRC on the Palomar 5-m, WFCAM on the UKIRT 4-m, and SuPRIME-Cam on the Subaru 8-m to obtain optical/near-IR imaging of a 30 arcmin region around previously studied high-redshift clusters. Colors are used to identify likely member galaxies which are targeted for follow-up spectroscopy with DEIMOS on the Keck 10-m. I describe the large scale structures to be photometrically and spectroscopically confirmed so far through this program. In particular, I focus on our multi-wavelength studies of the Cl 1604 supercluster at $z = 0.9$, a large scale structure containing at least eight massive clusters and spanning 10 Mpc by 100 Mpc. I will describe the filamentary structure of this supercluster, the galaxy properties as a function of environment, and the large population of (optically-innocuous) active galaxies detected through radio, mid-IR, and X-ray observations. The physical processes responsible for star-formation, starbursts, and nuclear activity in these intermediate-density regimes and the implications for galaxy evolution will be discussed.

Dr. Lori Lubin

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Thursday, October 18, 2007

4:00-5:20 PM MND 1015

Open & Free to all Students, Faculty & Public