

SAN DIEGO STATE UNIVERSITY DEPARTMENT OF PHYSICS AND DEPARTMENT OF
ASTRONOMY COLLOQUIUM

Speaker: Dr. Yicheng Guo (Lick Observatory, University of California, Santa Cruz)

Topic: Distant Low-mass Galaxies as an Incisive Tool to Explore Galaxy
Formation and Evolution

Time: 3:00 PM, Friday, March 4, 2016 (refreshments served at 2:45 PM)

Place: Room 215, Physics-Astronomy Building (PA-215)

Abstract:

Distant low-mass galaxies, with stellar mass below $10^{9.5}$ solar mass, are key to our understanding of galaxy formation. They are the building blocks or progenitors of massive galaxies, e.g., our Milky Way. They are also the most sensitive probes of the feedback mechanisms that regulate the star formation, due to their shallow gravitational potential wells. Our knowledge of distant low-mass galaxies is, however, very limited because of the difficulty of observing them as well as modeling them. I will present my work on using deep multi-wavelength photometric and spectroscopic surveys to study three aspects of low-mass galaxies when the universe was 8-billion-year old: star formation, metallicity, and morphology. I will discuss how to use them to understand the physical mechanisms that control the mass--energy--chemical cycles in galaxies. I will also discuss a future perspective, taking advantage of upcoming large optical/IR telescopes, of using low-mass galaxies as analogs to investigate the first galaxies when the universe was less than 1-billion-year old as well as to test fundamental physics of our universe.