

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

Speaker: Prof. Eric Sandquist, San Diego State University

Topic: Precise Star Clocks in Astronomy

Time: 3:00 PM, Friday, October 23, 2015 (refreshments served at 2:45 PM)

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

Abstract:

For the majority of applications in astronomy, age can only be inferred from stars, but it is also frustratingly difficult to determine: age can't be directly measured, and it almost always requires some degree of theoretical modeling. In this talk, I describe efforts to calibrate astronomical age dating techniques using the high precision measurements that can be made for stars in binary systems if one of the stars is nearing or beyond the exhaustion of its core hydrogen. By finding these systems in star clusters, we can precisely calibrate other dating techniques. Asteroseismology of giant star oscillations and gyrochronology of main sequence star rotation will be increasingly important age dating techniques in the near future, but they have substantial exposure to systematic errors. I will discuss our efforts to eliminate these errors, as well as the possibility of greatly improving measurements of the translation between the original mass of a star and its white dwarf corpse (the so-called initial-final mass relation) and the transition from stars that produce supernova explosions to those that don't.