PHYSICS AND ASTRONOMY
SEMINAR

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"Exploring Multiple Populations in Globular Clusters in the Milky Way and Beyond"

Abstract

Globular clusters in the Milky Way are not simple stellar populations, but rather contain the products of multiple epochs of star formation. Later generations of stars are more centrally concentrated in many clusters, as shown by photometric, chemical, and kinematic evidence. The compositions of later generation stars reflect the products of proton-capture nucleosynthesis from first generation stars.

The new paradigm of multiple stellar populations in globular clusters may provide a context to explain integrated color gradients reported previously in a few clusters in the 1970s, 1980s, and 1990s, and may provide an opportunity to detect and study multiple populations in globular clusters in external galaxies. The WIYN Indiana Northern Globular Cluster Survey (WINGS) is exploring spectroscopic and photometric strategies to detect population gradients in Milky Way and Local Group globular clusters using the blue and red CN systems. Observations of gradients in CN strength in the integrated light of globular clusters in galaxies beyond the local group will require spatial resolution exceeding what is possible with Hubble, but possible with TMT. Such studies with TMT will help us constrain the properties of the original star forming events that produced globular clusters in different environments, and allow us to connect the clusters we observe today with the observation of high redshift cluster-forming events in the early universe observed directly with TMT.

Wednesday, July 30, 2014
11:00 a.m.
Herzberg Institute of Astrophysics
Large Conference Room