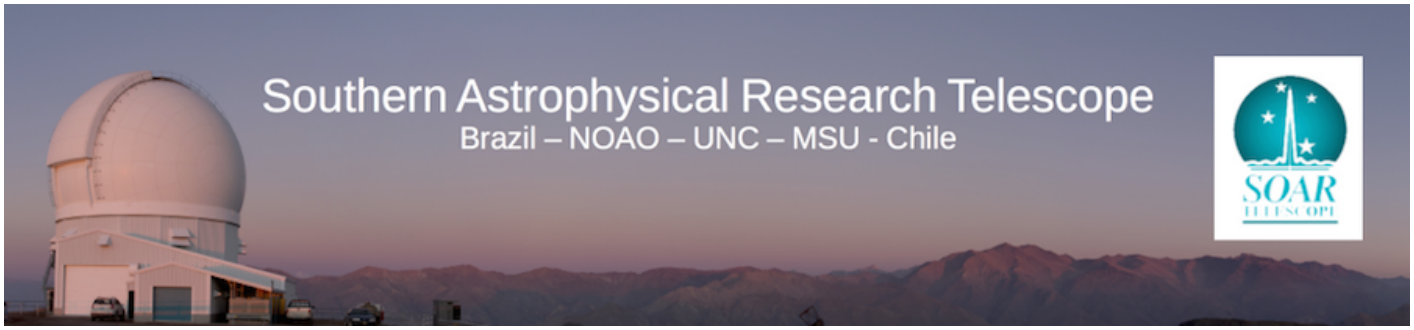

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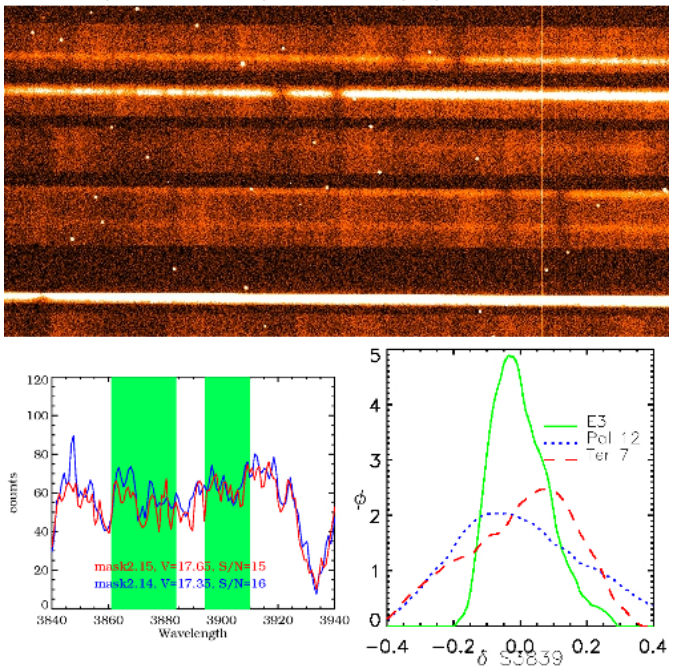
First SOAR MOS observations find old Galactic globular cluster with no signatures of multiple stellar populations

Submitted by cbriceno on Wed, 2015-08-12 16:04

Traditionally known as the quintessential single stellar populations, precise HST photometry and higher-resolution spectroscopy have found that most, if not all, Galactic globular clusters host more than one stellar population. Mutiple stellar populations are produced if the star cluster is massive enough to retain the enriched material produced by stellar evolution. What happens then in the case of low-mass clusters? Will they host multiple stellar populations or is there a mass limit for this self-enrichment?



A team of MSU astronomers used the newly commissioned MOS capabilities of the Goodman spectrograph at SOAR [1] to study 23 red giant branch stars in the low-mass cluster E 3 (See top panel of figure for an example of the raw MOS data). By studying the cyanogen (CN) absorption features in the blue part of the spectra (bottom left panel in the figure), they have found a very narrow distribution of the CN abundance (in the bottom right panel compared to the CN distribution in the low mass clusters

Palomar 12 and Terzan 7), consistent with a cluster hosting only a single stellar population and no signs of self-enrichment. E 3 would be the first bona fide Galactic globular cluster hosting a genuine single stellar population.
Jul 27, 2015
Reference: R. Salinas & J. Strader, ApJ in press, http://arxiv.org/abs/1506.00637 [2]

(Click here to go back to the SOAR News Archive) [3]

Links
[1] http://www.ctio.noirlab.edu/soar/content/goodman-high-throughput-spectrograph
[2] http://arxiv.org/abs/1506.00637
[3] http://www.ctio.noirlab.edu/soar/news