Contributed Talk

Splinter Populations

Spectroscopic insights on the extreme horizontal branch population of ω Centauri

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The formation mechanism of extreme horizontal branch (EHB) stars in massive globular clusters is still highly debated and many different theories have been proposed to explain their existence. The important fraction of helium-enriched EHB stars is especially challenging to explain by canonical evolution. In order to better characterize that population in ω Centauri, we combined our own ω Cen EHB stars' spectra with previously published data to gather a significant sample representative of the EHB population of that cluster. More than 200 spectra were analysed to derive fundamental parameters, $T_{\rm eff}$, $\log g$ and $\log N({\rm He})/N({\rm H})$, by fitting them with a grid of non-LTE model atmospheres. That way we provide consistent atmospheric parameters for 150 EHB stars in ω Cen, which is the largest set of such stars to have been spectroscopically analyzed in a globular cluster. The position of our stars in the $T_{\rm eff} - \log g$ plane matches very well that of the theoretical EHB band and we find about 2/3 of the sample to be part of the He-enriched sub-classe, sitting at the very hot end of the EHB. The ω Cen stars also show interesting characteristics that are significantly different than that of the field population. Thus I will present the first results of our on-going project dedicated to the spectroscopic study of clusters' EHB population.