

## Ages and age spreads in young and old massive clusters

*Friday, 22 September 2017 11:45 (30 minutes)*

In this talk I will touch the connection between two different problems: 1) the presence of ‘multiple stellar populations’ in Galactic Globular Clusters, testified by the presence of stars with important differences in the abundances of light elements in these systems, but not among the halo field stars, requires the formation of “second generation stars”. How long is the time span required to produce the chemical anomalies? This depends on the different scenarios proposed. 2) Young Massive Clusters (YMC) in the Magellanic Clouds display extended turnoff regions: are these the signature of an extended period of star formation, and which is the age spread required? And is this the same phenomenon of which we see the signature in old GCs? Recently, the youngest among YMC were shown to host not only extended turnoffs, but also a “split” main sequence (MS), which is not compatible with an interpretation in terms of age differences, but is well understood in terms of different rotation of the component stars, being the blue MS stars slowly rotating and the red MS highly rotating. This has gained also observational support. In addition, the presence of possibly “younger” blue MS stars can be interpreted in terms of coeval stars whose initially rapid rotation has been braked. Therefore, prolonged star formation in young massive clusters is not the solution for the multiple population problem in old GCs.

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