Contribution ID: **93** Type: **talk**

Convective Core Overshooting and Ages: Probabilistic Constraints from Color–Magnitude Diagrams of LMC Clusters

Thursday, 21 September 2017 19:00 (15 minutes)

We present a framework to simultaneously constrain the values and uncertainties of the strength of convective core overshooting, metallicity, extinction, distance, and age in stellar populations. We then apply the framework to archival Hubble Space Telescope observations of six stellar clusters in the Large Magellanic Cloud that have reported ages between 1 and 2.5 Gyr. Assuming a canonical value of the strength of core convective overshooting, we recover the well-known age–metallicity correlation, and additional correlations between metallicity and extinction and metallicity and distance. If we allow the strength of core overshooting to vary, we find that for intermediate-aged stellar clusters, the measured values of distance and extinction are negligibly effected by uncertainties of core overshooting strength. However, cluster age and metallicity may have disconcertingly large systematic shifts when the overshooting extent is allowed to vary by more than 0.05 Hp. Using the six stellar clusters, we combine their posterior distribution functions to obtain the most probable core overshooting value, 0.500-0.134+0.016Hp, which is in line with canonical values.

Primary author: GIRARDI, Leo (Osservatorio Astronomico di Padova)

Presenter: GIRARDI, Leo (Osservatorio Astronomico di Padova)

Session Classification: Evolved stars and the connection to Galactic archaeology