

Stellar Populations - Interpretative Tools

This course aims at illustrating the workings of the stellar evolution theory with respect to those specific properties which allow us to derive information on the formation and evolution of galaxies.

The course develops as follows:

1. A summary of the evolutionary behaviour of stellar tracks on the Hertzsprung Russel Diagram (HRD) and the dependence on initial mass and chemical composition of the star . Special focus is put on those features on the HRD which are used as age and as distance indicators.
2. Models of Atmospheres, Photometric Systems, Bolometric Corrections. The appearance of the stellar tracks on the Color-Magnitude Diagram (CMD) is then illustrated.
3. Stellar Counts on the CMD and how they are related to the star formation history.
4. Synthetic CMD method to analyze the CMD of stellar populations. The working of photometric errors.
5. The Fuel Consumption theorem: understanding how the integrated light of a stellar population is built.
6. Integrated Magnitudes, Colors and Line indices to trace mass, age and metallicity of galaxies.
7. A few examples from the literature showing how these tools are put at work on nearby galaxies.