Asteroseismology as a way to calibrate Rossby number and gyrochronology relations for field stars

Enrico Maria Nicola Corsaro*[1]

[1]INAF - Osservatorio Astrofisico di Catania – Italy

Abstract

In this talk I will discuss how asteroseismic-based results on stellar structure and evolution can be used to infer important properties on the stellar dynamics for a wide range of stars in the main sequence. In particular, I will show the recent results about the calibration of a relation to predict the stellar convective turnover time, hence its Rossby number, starting from our knowledge of the color index. This is a powerful relation that can be used to obtain insights on the dynamo action that operates inside the stars. In the remainder of the talk, I will present a preliminary attempt to calibrate gyrochronology relations using ages from stars in the field, and by comparing the result with one based on cluster stars. With the advent of the ESA PLATO mission we will have the opportunity to refine and improve these relations by exploiting a much larger sample of seismic stars that can be used for calibration and testing, hence to infer more reliable results for a wider range of stellar fundamental properties of e.g. mass, age, and metallicity.

*Speaker