Asteroseismically determined rotation and gyrochoronology.

Guy Davies*[1]

[1]University of Birmingham (HiROS/BiSON) – School of Physics and Astronomy, University of Birmingham, Edgbaston, Birmingham, B15 2TT, UK, United Kingdom

Abstract

Gyrochoronology allows us to estimate the age of low-mass stars from observations of their period of rotation. The information required to test gyrochoronology relations can be determined by studying solar-like oscillations. Particularly for dwarf stars, it it now possible to determine, using asteroseismology, stellar mass, age, and rate of rotation.
An excellent example of a system that can test or inform gyrochronology is that of 16 Cyg, recently extensively observed by Kepler. The system is a hierarchical triple with two Sun-like stars, A & B, in a wide orbit. Asteroseismology has already provided a well constrained masses and an age for the system.
We will present results on the rate of rotation of 16 Cyg A & B determined using asteroseismology and show that results are sufficiently well constrained so as to inform gyrochoronology. Further to this we will show results from a study of a further 61 stars that have the required asteroseismic mass, age, and rotational period estimates. We will show that asteroseismic estimates of rotation are consistent with surface rotation measures and will summarise our preliinary results on testing gyrochoronology with these 61 stars.

*Speaker