
Stellar evolution in motion: period spacings in gamma Doradus stars

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Abstract

Gamma Doradus pulsators are early F-/late A-type main-sequence stars, which places them directly within the transition region between low-mass stars with a convective envelope and higher-mass stars having a convective core. Even though various stellar evolution models are available for this type of stars, there is currently very little known about their internal structure and changes during their evolution, especially in terms of the size of the convective core and the present mixing processes. Gamma Doradus stars provide us with a unique opportunity in this regard, as they exhibit rich frequency spectra of gravity-dominated modes which penetrate the star right up to the core itself. We present the first observational detection of non-uniform period spacings in the gravity-mode pulsation spectra of gamma Doradus stars, which show possible signatures of rotation, convective modulation, and chemical gradients and mixing processes present in the stars.

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