Instituto de Astronomía, sede Ensenada
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Seminario

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The spectroscopic multiplicity fraction in a sample of A/F-type (candidate) hybrid stars from the Kepler mision

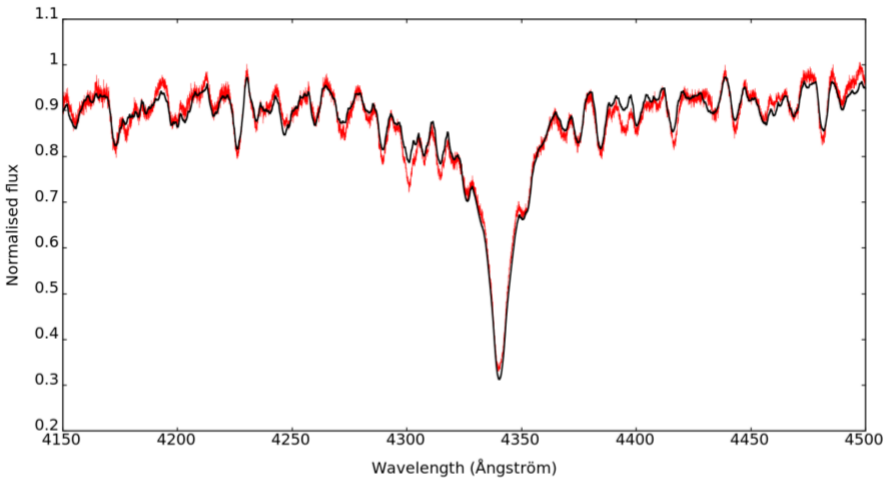

Figure 7: Part of the observed spectrum for KIC6432054 (in black) and model (in red) using the best-fit set of parameters obtained with the code GIRFIT.

Dra. Patricia Lampens (Royal Observatory of Belgium)

Abstract: In an effort to understand and unravel the enigma of the low frequencies in the brighter A/F-type candidate hybrid pulsators of the Kepler mission, we started a radial-velocity monitoring campaign with high-resolution échelle spectrographs in European observatories since 2013. We thus collected about 800 multi-epoch, high-resolution spectra for a sample of 83 A/F-type candidate hybrid pulsating stars from the Kepler mission. With at least four-five spectra per object, we determine the epoch radial velocities, projected rotational velocities, atmospheric stellar properties (effective temperatures and gravitational accelerations) and we provide a classification scheme on the basis of the cross-correlation functions and the radial velocities as a function of time. In this study, we obtain a lower estimate of the fraction of hybrid stars which belong to spectroscopic binary and multiple systems. In the first phase (49 hybrid stars), we derived a global spectroscopic multiplicity fraction of 27% (Lampens et al. 2018). In the second phase, we intend to obtain the same information for another 46 candidate hybrid stars. Finally, for some cases, a combined analysis of the Kepler time delays (affecting the short-period pulsation frequencies) and the radial velocities enabled us to derive well-defined orbital solutions, accurate mass ratios as well as the (most probable) identification of the pulsating component.

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