
Impact of gaps in the light curves of pulsating stars on the determination of periodicities in their oscillation spectra

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Abstract

We have demonstrated (Pascual-Granado et al. 2014, in press) that ARMA methods are better suited to reconstruct light curves of pulsating stars with small gaps from the technical and even more importantly the physical point of view. The ARMA models can exactly represent the signal contained in the light curves with a finite number of terms, and more importantly, these preserve the frequency content of the original function describing the pulsations of the star. This is the main reason why the method MIARMA (Method for Interpolation using ARMA) developed by J. Pascual-Granado, has been selected by the CoRoT's Scientific Committee for filling the gaps in the satellite's time series.

Here we examine the impact of the different gap treatments in the light curves for a sample of pulsating stars observed by CoRoT and Kepler. We provide a qualitative (behaviour) and quantitative study (errors) when compared with no filling or filling with linear interpolation. We also discuss the impact on the determination of large and small separations in solar-like stars, and on the recently determination of mean densities of delta Scuti stars (Suárez et al. 2014, A&A 563, 7) through large separations obtained with Fourier transform techniques (e.g. García Hernández et al. 2013 559, 63).

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