An information preserving method for producing full coverage CoRoT light curves

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Abstract

Invalid flux measurements, caused mainly by the South Atlantic Anomaly crossing of the CoRoT satellite, introduce aliases in the periodogram and wrong amplitudes. It has been demonstrated that replacing such invalid data with a linear interpolation is not harmless. On the other side, using power spectrum estimators for unevenly sampled time series is not only less computationally efficient but it leads to difficulties in the interpretation of the results. Therefore, even when the gaps are rather small and the duty cycle is high enough the use of gap-filling methods is a gain in frequency analysis. However, the method must preserve the information contained in the time series.

We present a gap-filling method based on autoregressive moving-average modelling of the data that make no assumptions about the analyticity of the signal. This method will be implemented as user choice in the new CoRoT Level 3 data release. In this contribution we give a short description of the method and show some results when applying it to CoRoT seismo light curves. We show that this method remove the aliased periodogram making unnecessary any prewhitening technique.

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