Contributed Talk

Splinter Activity

GPS: A novel method to obtain stellar rotational periods

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High-quality photometric data acquired from planet searching missions as Kepler and COROT allow better insights into the variability and activity of stars. Analysing periodic patters in stellar light curves we can, within certain confidence, link the observed variability to transits of magnetic features over the stellar surface. This in turn, allows us to calculate stellar rotational periods from the analysis of the gradient of the power spectra (GPS) of stellar light curves. We simulate transits of magnetic features and calculate the GPS of the generated stellar brightness variations for the Sun-like stars. We show that the power spectra of brightness variations of stars with magnetic activity similar to that of the Sun and lower do not contain a prominent rotational harmonic. Nevertheless, the rotational periods of these stars can be reliably determined from the profile of the GPS. We apply this method to 1176 Sun-like stars to calculate their rotational periods and compare our results to the earlier works. The method gives results consistent with others but allows determining periods of less variable stars.