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Enhancements of Bayesian Blocks; Application to Large Light Curve Databases

Bayesian Blocks are optimal piecewise linear representations (step function fits) of light-curves. The simple algorithm implementing this idea, using dynamic programming, has been extended to include more data modes and fitness metrics, multivariate analysis, and data on the circle (Studies in Astronomical Time Series Analysis. VI. Bayesian Block Representations, Scargle, Norris, Jackson and Chiang 2013, ApJ, 764, 167), as well as new results on background subtraction and refinement of the procedure for precise timing of transient events in sparse data. Example demonstrations will include exploratory analysis of the Kepler light curve archive in a search for "star-tickling" signals from extraterrestrial civilizations. (The Cepheid Galactic Internet, Learned, Kudritzki, Pakvasa1, and Zee, 2008, arXiv: 0809.0339; Walkowicz et al., in progress).