DETECTING PERIODIC VARIABLES AUTOMATICALLY FROM LIGHT CURVE DATABASES

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Abstract. We present a new method to discriminate periodic from non-periodic light curves. We introduce a periodic kernel and maximize the entropy for finding periodicities in stellar light curves. We first tested the proposed method on an artificial dataset containing 100,000 synthetic light curves. Then we applied our method to the MACHO survey and the EROS2 dataset containing approximately 30 millions light curves. The EROS2 dataset was processed in 10 hours on a cluster of General Purpose GPUs. The results show that the proposed method outperforms traditional methods used in astronomy.

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