

Building a robust sample of Fermi-LAT blazars that exhibit periodic gamma-ray emission

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Blazars can show variability on a wide range of timescales. However, the search for periodicity in the gamma-ray emission of blazars remains an on-going challenge. This contribution will show the results obtained when a systematic pipeline is used to implement ten well-established methods for searching for periodicity. We analyze the most promising candidates selected from our previous work, extending the Fermi-LAT light curves over three more years, for a total telescope time of twelve years. These improvements have allowed us to build the first sample of blazars that display a periodicity detected at a significance $>5\sigma$. Finally, we will discuss the potential origins for the periodic behavior observed in blazars.

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