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A Phase-Resolved Study of Bright Fermi-LAT Pulsars

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Pulsars are rapidly rotating neutron stars that emit electromagnetic radiation over a broad energy band. The third pulsar catalogue (3PC) of the Fermi Large Area Telescope (LAT) contains more than 300 gamma-ray pulsars and pulsar candidates. However, phase-resolved spectroscopy has been performed on only a few of them, which was not sufficient to reveal new trends that could help constrain the pulsar emission mechanism. Our objective is to conduct a systematic study using phase-resolved spectroscopy on two samples (young and millisecond pulsars) using the recently released 3PC data in order to identify novel trends, such as a relationship between the spectrum's hardness and the light curve peak brightness. The brightest candidates with a range of light curve profiles, spin-down power ranges, and radio pulse characteristics have been included in this sample. In this talk, we discuss our source selection, phase selection, analysis calibration, and preliminary spectral analysis results.

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