



Contribution ID: 56

Type: Oral Presentation

## Parametric Spectral and Light Curve Modelling of Gamma-ray Millisecond Pulsars

Tuesday, 5 July 2022 12:15 (15 minutes)

Millisecond pulsars (MSPs) are a class of pulsar with fast spin periods ( $<30$  ms) and relatively low surface magnetic fields ( $\sim 10^9$  G). The *Fermi* Large Area Telescope (LAT) has detected gamma rays from more than 275 pulsars over the past 14 years, with over 125 being MSPs. Capitalising on this substantial growth in the population of detected gamma-ray MSPs that now includes bright pulsars with high-quality spectra and light curves, we aim to uncover new and confirm tentative trends among key quantities by using the latest data from the Third *Fermi* Pulsar Catalog (3PC). Specifically, we will perform phase-resolved spectroscopy for more than 25 bright MSPs. As a first step, we will conduct parametric fitting of GeV spectra and light curves in order to isolate morphological features (such as main peaks, inter-peak bridge emission, and local maxima) and then define relevant phases relating to these features for follow-up spectral analysis. This will allow us to probe the spectra relating to the distinct light curve features, informing subsequent modelling of the MSP emission processes and possible new trends.

### Apply to be considered for a student ; award (Yes / No)?

No

### Level for award;(Hons, MSc, PhD, N/A)?

N/A

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**Session Classification:** Astrophysics

**Track Classification:** Track D1 - Astrophysics