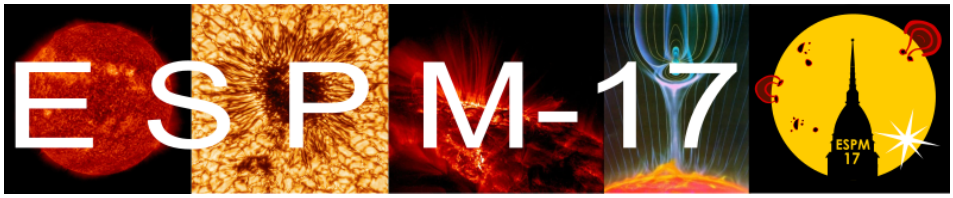


Contribution ID: **58** Type: **Poster**

# Searching for rapid pulsations in solar flare X-ray data

Many studies of quasi-periodic pulsations in solar flares have identified characteristic periods in the 5 –300s range. These phenomena are crucial to understand as they relate to fundamental energy release on the Sun. Due to observational constraints it is unclear whether the periods of quasi-periodic pulsations extend down into the < 5s period regime. The Fermi Gamma-ray Burst Monitor (GBM) has observed approximately 1500 solar flares to date in high cadence 16 Hz burst mode, providing us with an opportunity to study short-period pulsations at X-ray energies. We systematically analyse every solar flare observed by Fermi/GBM in burst mode, using a stepping analysis window approach to search for time-localized quasi-periodic pulsations in multiple X-ray energy bands. To better understand these results, we complement this with analysis of synthetic solar flare lightcurves, both with and without oscillatory signals present, in order to understand the likely false alarm and true positive rates in the real solar GBM data. Overall, we do not find strong evidence for widespread short-period quasi-periodic pulsations, indicating either low base occurrence rates or low signal-to-noise ratios –less than 1 –of such signals in the Fermi/GBM data. Our investigation does however identify several flares showing strong evidence of short-period quasi-periodic pulsations, including multi-periodic events.

**Primary author:** INGLIS, Andrew (NASA Goddard Space Flight Center)

**Co-author:** Dr HAYES, Laura (European Space Agency)

**Session Classification:** Coffee break and poster session 1

**Track Classification:** Fundamental mechanisms of solar plasmas: magnetic reconnection, waves, radiation and particle acceleration