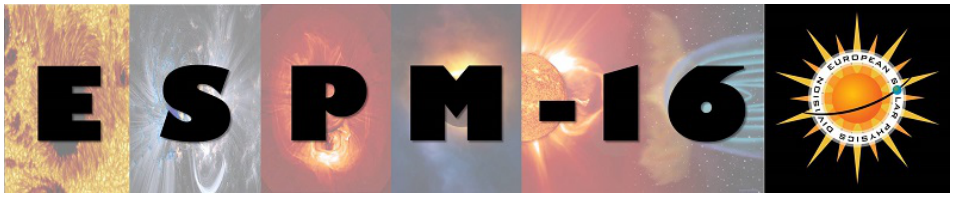

Contribution ID: **191** Type: **Poster**

Discovery of correlated evolution in radio burst source paramters: properties and links to local magnetic field evolution during a microflare

Wednesday 8 September 2021 17:48 (13 minutes)

With the advent of modern compact radio interferometric arrays in metrewavebands, high fidelity snapshot spectroscopic imaging studies at sub -second and sub-MHz scales became possible. Murchison Widefield Array (MWA) operating in 80 - 240 MHz band is one such array. A recent study using MWA data of a radio burst source, associated with a microflare, discovered correlated quasi-periodic pulsations in its size, orientation and flux with a dominant periodicity of 30s. Two modes of correlated evolution were also discovered in the burst source evolution: S and T modes. The S mode showed anti-correlated QPPs in the size and flux, akin to a sausage mode. But, the T mode had correlated QPPs in the size and orientation, like a twist-untwist motion. The 30s periodicity could be linked to local Alfven timescale across the dominant magnetic field braids in the system. T mode QPPs were found in the pre-flare phase, while during the microflare S mode came into prevalence alongside the T mode. In the post-flare phase, T mode paved way completely to S. This flare mediated mode conversion from T to S possibly relates to the redistribution of excess free energy in the critically braided pre-flare magnetic loop. Understanding these modes and their evolution could serve as a diagnostic for probing physical dynamics at weak particle acceleration/flaring events, which are often difficult to study using high energy observations.

Author: MOHAN, Atul (Rosseland Centre for Solar Physics, University of Oslo)

Presenter: MOHAN, Atul (Rosseland Centre for Solar Physics, University of Oslo)

Session Classification: Poster Session 8.3

Track Classification: Session 3 - Fundamental Plasma Processes in the Solar Atmosphere: Magnetic Reconnection, Waves, Emission, Particle Acceleration