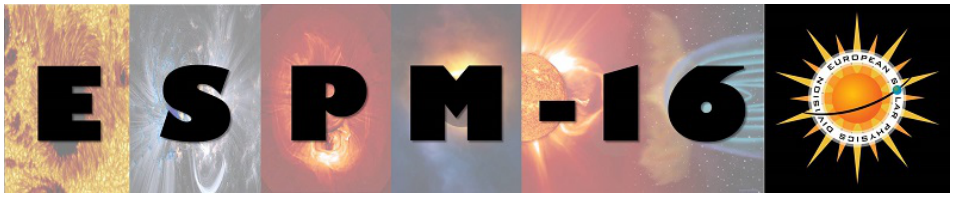

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Microwave Oscillations in a solar flare

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During solar flares, particles are accelerated to relativistic energies producing radio bursts at a large range of frequencies. The intensity of these radio bursts depends on their emission mechanism and the local conditions such as magnetic field strength, plasma density and the distribution of accelerated electrons. However, the presence of MHD waves in the loops can periodically change the local magnetic fields, resulting in modulations and oscillations of the observed radio bursts.

We examine microwave pulsations that occurred after a GOES C1.5-class flare and were observed with the Karl G. Jansky Very Large Array (VLA) at 1–2 GHz. VLA's high temporal resolution (50 ms), along with imaging spectroscopy, provides a detailed view of the pulsations. We also utilise the Solar Dynamics Observatory in extreme ultraviolet (EUV) and magnetic extrapolation to build a coherent picture. High brightness temperature (10^8 MK), polarisation properties accompanied by suitable magnetic field strengths, and coronal density suggest Electron-Cyclotron Emission (ECM). The microwave pulsations are observed from 1 GHz to 1.5 GHz exhibit 4.5 secs for all frequency channels, most likely caused by Sausage mode oscillations. The imaging shows multiple source locations non-cospatial with flare location. The magnetic extrapolation reveals the magnetic connectivity from the flare location to the microwave sources providing channels for the energetic particles from the flare site to the radio source location. I will discuss the detailed results and physical interpretation of the microwave pulsations seen for the event.

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