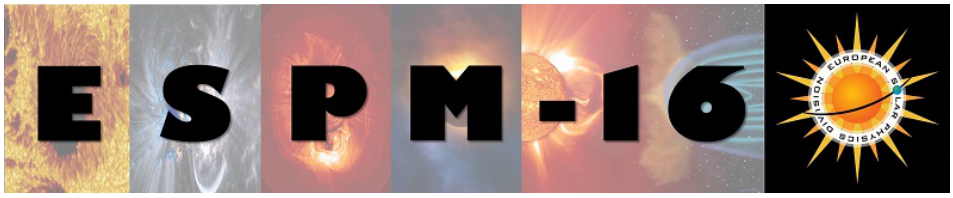

Contribution ID: **445** Type: **Poster**

Opening a new window of spectro-temporal polarimetric imaging study of low frequency radio Sun using SKA precursor

Tuesday 7 September 2021 09:26 (13 minutes)

Polarization properties of solar radio emissions are known to be a rich source of information about the solar emission mechanisms and the magnetic field topology. Nonetheless, largely due to technical challenges, polarimetric imaging observations of the Sun at low radio frequencies have remained very rare. The degree of polarization of the solar radio emission varies dramatically over time, frequency and also in spatial structure depending on emission mechanism. The radio bursts show moderate to high degree of circular polarization and the quiet sun thermal emissions show very low degree of circular polarization (~<1%). When it becomes possible, detection of very low circular polarisation from quiet Sun thermal emission will be an important tool to measure quiet Sun coronal magnetic field. Simultaneous measurement of linear and circular polarisation from active emissions are important to understand the quasi-longitudinal and quasi-transverse propagation and will direct probe the magnetic field geometry. Due to large Faraday rotation, narrow bandwidth observations are allowing us to detect possibly the first ever linearly polarised emission from radio bursts at low-frequencies. Perhaps the most rewarding, and also challenging, will be the polarimetric observations of gyrosynchrotron emission from CME plasma, which will allow us to model the CME plasma parameters unambiguously. We are developing a radio interferometric imaging pipeline for snapshot spectroscopic polarimeteric solar images to enable such studies. Here we summarise its current status and showcase some early results. While this pipeline is optimised for the Murchison Widefield array, a SKA-low precursor, it can be adapted for the SKA-Low.

Student poster?

Authors: KANSABANIK, Devojyoti (National Centre for Radio Astrophysics - Tata Institute of Fundamental Research, Pune, India); Dr OBEROI, Divya (National Centre for Radio Astrophysics, Tata Institute of Fundamental Research, Pune, India)

Presenter: KANSABANIK, Devojyoti (National Centre for Radio Astrophysics - Tata Institute of Fundamental Research, Pune, India)

Session Classification: Poster Session 3.5

Track Classification: Session 4 - From Radio to Gamma Rays: Near-Sun Manifestations and Triggering of Solar Flares and Coronal Mass Ejections