Astronomy & Astrophysics Division Seminar

Title : Where the energy during solar flare is released?

Speaker : Dr. Susanta Kumar Bisoi (National Astronomical Observatories,Beijing, China)

Date: 07.03.2019 (Thursday)

Time: 16:00 Hrs

Venue: Seminar Room # 113/114 (Thaltej Campus)

Abstract:

An outstanding question in solar physics is how and where the large amount of energy (up to 10^33 erg) is released during solar flare? The energy released during flare accelerates non-thermal electrons in solar corona which propagate along coronal magnetic field lines as electron beams and produce short-lived radio emission that appear as rapidly drifting structures in a radio dynamic spectra. They are known as Type III radio bursts. Such bursts are commonly associated with electron acceleration and flare energy release, particularly those Type III bursts identified in the decimetric frequency range (400-2000 MHz). Coronal X-ray and extreme Ultra-Violet observations have shown evidences of such electron acceleration. However, the observational evidence of the location of electron acceleration and so the flare energy release is still remained elusive. The ultra-high cadence radio dynamic imaging spectroscopy of Miangtu Spectra Radio Heliograph (MUSER), a radio interferometer located in China that operates in the decimetric frequency range of 400-2000 MHz, can be effectively used to solve this mystery. I will present in my talk MUSER imaging spectroscopy observations of such Type III decimetric bursts observed during flares with high spectral (25 MHz), spatial (1.3 to 50 arcsec) and ultra-high temporal (25 ms) resolution, and discuss how we can use the high resolution and high dynamic range radio imaging of Type III bursts to find the location of electron acceleration, and in turn, the location and nature of flare energy release.