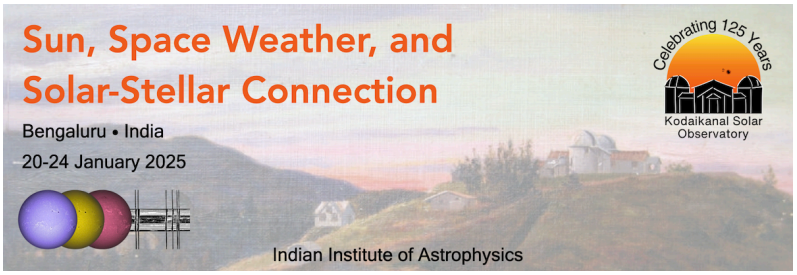

Contribution ID: **192** Type: **Poster**

Studying Electrostatic Solitary Wave Phenomena Due to Solar Wind-Magnetosphere Interaction at Mars's Reconnection Region

Solar wind interaction with the planetary magnetic field (or a conducting ionosphere), results in the formation of a magnetosphere which may be intrinsic or induced, depending upon whether the planet has its own magnetic field or not. Plasma waves are the means through which different subsystems of the magnetosphere like the magnetopause, ionopause, plasmasphere, etc. interact with each other, thus controlling the dynamics of the magnetosphere. Though the planet Mars lacks a global intrinsic magnetic field, but due to the presence of its crustal magnetic anomalies and its direct interaction with the solar wind, a mini-magnetosphere is formed. The MAVEN (Mars Atmosphere and Volatile EvolutioN) data has shown magnetic-reconnection events at mini-magnetopause. Due to the intermixing of different plasma populations coming from the solar wind and the planetary ionosphere results in the rich wave phenomena in this region. Ion-acoustic solitary waves have been observed by MAVEN Langmuir Probes and Waves (LPW) medium frequency burst capture data. These waves are isolated sinusoids having bipolar structures in the electric field. In our study, we have examined the wave activity in the magnetic reconnection region by setting up a theoretical model consisting of solar wind protons and Martian ions (O+ and O2+) with superthermal electrons in order to explain the generation of ion-acoustic solitary waves observed by MAVEN.

Contribution Type

Poster

Theme

Energetic Phenomena

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Session Classification: Poster Session-II / Coffee Break