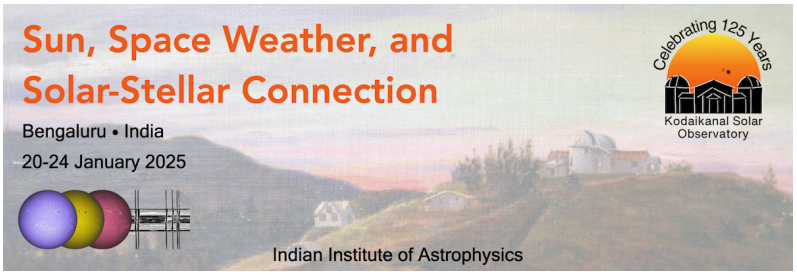

Contribution ID: **106** Type: **Poster**

Modeling the dynamics of Sun's atmosphere to study its energy balance and heating in coronal region.

Heating in the solar atmosphere has been a long standing problem in solar physics. Despite advancements in both observational and theoretical frameworks, the precise mechanisms that heat the corona are not yet well understood. Phenomena like **magnetic reconnection** and **wave heating** have been suggested as the cause, but the extent to which each process contributes to the overall energy balance is still unclear. This study aims to develop a simple numerical model of the Sun's atmosphere, encompassing the upper convection layer up till the corona, using **magnetohydrodynamic (MHD) code PLUTO** and to study the energy balance of the solar atmosphere. Accurate chromosphere representation requires **non-local thermodynamic equilibrium (NLTE)** approach for radiative transfer which gives a good approximation for radiative cooling while ambipolar diffusion and hall effect are crucial for heating in the atmosphere. Lines from neutral hydrogen, calcium ions (Ca II), and magnesium ions (Mg II) are prominent in the chromosphere for radiative cooling which is calculated using the recipe formulated by Carlsson and Leenaarts (2012). By including the NLTE radiative transfer approximation in the MHD model we seek to explore the energetic events such as **magnetic reconnection, chromospheric jets and magneto-acoustic waves** and their corresponding EUV emissions to probe the heating mechanisms.

Contribution Type

Poster

Theme

Energetic Phenomena

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