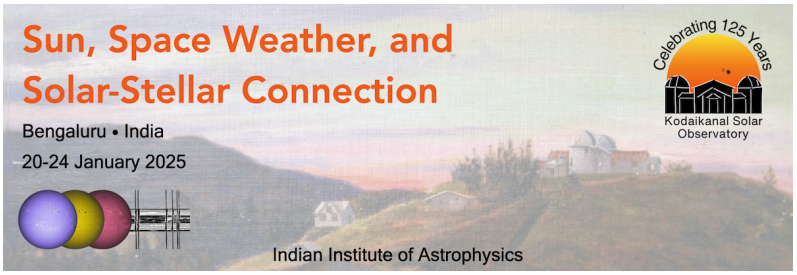

Contribution ID: **195** Type: **Poster**

Poynting flux of MHD waves in rotational plasma flows

Magnetic flux tubes in the presence of background rotational flows are abundant throughout the solar atmosphere and may act as conduits for MHD waves to transport magnetic energy throughout the solar atmosphere. We investigate the Poynting flux associated with these waves within the presence of background rotational plasma flows. The MHD wave solutions of the equilibrium configuration are obtained using the SESAME code and we derive an expression for the vertical component of the Poynting flux, associated with MHD modes. In addition, we analyse the spatial structure of Poynting flux for different MHD modes under various background flow strengths. We show that the vertical component of the Poynting flux increases in the presence of a background rotational flow compared to a flux tube with no rotational flow. Finally, we present some results of 3D numerical simulations that investigate the energy fluxes associated with MHD waves in the presence of different plasma flow and magnetic twist configurations. These simulations feature a closed magnetic loop system in which a rotational flow is introduced at one footpoint in addition to photospheric perturbations acting as a wave driver. We present the resulting energy fluxes calculated in this setup and compare our findings to the energy fluxes of MHD waves observed in solar spicules or magnetic configurations in the absence of magnetic twist or rotational plasma flows.

Contribution Type

Theme

Solar Magnetism in High-Resolution

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