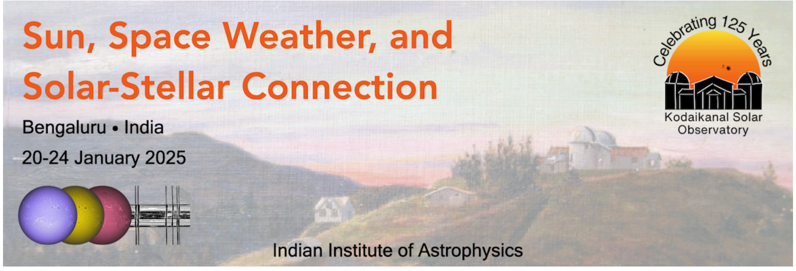

Contribution ID: **32**

Type: **Poster**

Athermal solar plasma fluctuations in helioseismic perspective

A plethora of waves and oscillations are ubiquitously excitable in the entire solar plasma spatiotemporal regime. A linear perturbation analysis on the kappa(κ)-modified viscoturbulent nonthermal solar plasmas is herein methodically carried out. It yields in a unique linear cubic dispersion relation for the self-gravitationally bounded solar plasma system. The multi-parametric dispersion signatures sensitively depend on the nonthermality spectral index, plasma temperature, fluid dynamic viscosity, thermal conductivity, and geometrical curvature effects. Diverse modal features of the helioseismic *g*-mode and *p*-mode are analytically explored. The *g*-mode dominates only in the deeper constituent concentric layers of the Sun. The *p*-mode propagates throughout the Sun up to its surface. Existence of the solar five-minute oscillation is theoretically confirmed. The plasma nonthermality index, conductivity, and temperature serve as mode accelerating agents; while, the dynamic viscosity plays the role of a decelerating one. The radially outward photospheric *p*-mode energy flux density is estimated as 10^4 W m^{-2}. Leakage of this longitudinal *p*-mode energy flux contributes significantly to the chromospheric transverse spicule formation through mode conversion processes. Numerous solar observational data existing in the literature justifiably corroborate the findings of this proposed analyses.

Contribution Type

Poster

Theme

Solar Magnetism over Long-Time Scales

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