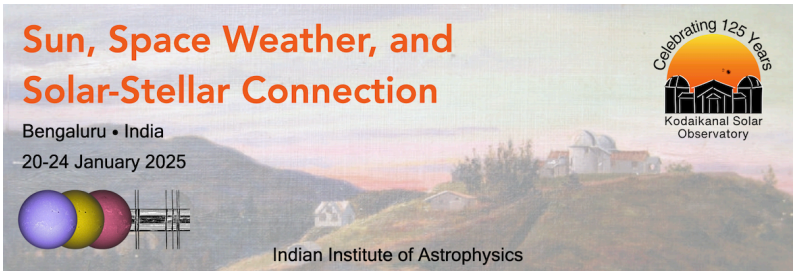

Contribution ID: **67** Type: **Poster**

Gravity Waves in the Lower Solar Atmosphere

Gravity waves are generated by turbulent subsurface convection overshooting or penetrating locally into a stably stratified medium. While propagating energy upwards, their characteristic negative phase shift over height is a well-recognized observational signature. Since their first detailed observational detection and estimates of energy content, a number of studies have explored their propagation characteristics and interaction with magnetic fields and other wave modes in the solar atmosphere. We have investigated atmospheric gravity wave dispersion diagrams utilizing intensity observations that cover photospheric to chromospheric heights over different magnetic configurations of quiet-Sun (magnetic network regions), a plage, and a sunspot as well as velocity observations within the photospheric layer over a quiet and a sunspot region. In order to investigate the propagation characteristics, we construct two–height intensity-intensity and velocity-velocity cross-spectra and study phase and coherence signals in the wavenumber-frequency dispersion diagrams and their association with background magnetic fields. We find signatures of association between magnetic fields and much reduced coherence and phase shifts over height from intensity-intensity and velocity-velocity phase and coherence diagrams, both indicating suppression/scattering of gravity waves by the magnetic fields. Our results are consistent with the earlier numerical simulations, which indicate that gravity waves are suppressed or scattered and reflected back into the lower solar atmosphere in the presence of magnetic fields.

Contribution Type

Poster

Theme

Solar Magnetism in High-Resolution

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