भारतीय खगोलभौतिकी संस्थान
INDIAN INSTITUTE OF ASTROPHYSICS
कोरमंगला **Koramangala,** बेंगलूरु **Bengaluru – 560034.**

स्नातक अध्ययन मंडल Board of Graduate Studies.

Visiting Student's Programme Seminar

Speaker: Mr.Abhinav Govindan Iyer

(M.Sc, IISER Trivandrum)

शीर्षक Title: Variations of Subsurface Flow Dynamics in Solar Active Regions with Depth, Magnetic Flux, and Sound Speed

सार Abstract

Understanding the subsurface flows in and around solar active regions is key to developing better models of flux emergence and sunspot evolution. The aim of this project is to analyze the subsurface flows for a large sample of active regions and study their dependence on quantities such as the unsigned magnetic flux and sound speed perturbation. Using data from HMI SHARPs, we identified 119 large active regions above a threshold unsigned flux of 9 x 10^{22} Mx. The flow maps were obtained from the time-distance helioseismology pipeline at JSOC Stanford. To reduce overall noise and look at general trends, we averaged the flow maps and magnetic field maps over all the active regions, after they had fully emerged. We found inflows of around 10 m/s towards the trailing polarity from the surface up to a depth of 13-15 Mm below. From 15-21 Mm, we found outflows around the same regions, indicating that there might be a large-scale circulation around the active regions. Further, we also found that the inflow amplitudes at the surface generally tend to increase with the unsigned magnetic flux as well as sound speed perturbation below the surface. These results indicate that the flows around active regions are affected by both magnetic field and thermal variations.

मंगलवार Tuesday 27, अगस्त August 2024

Time: 11:00 AM

Venue: प्रेक्षागृह Auditorium

सभी का स्वागत है All are welcome