भारतीय ताराभौतिकी संस्थान

INDIAN INSTITUTE OF ASTROPHYSICS

कोरमंगला **Koramangala, बेंगलूरु Bengaluru – 560034**

स्नातक अध्ययन मंडल **Board of Graduate Studies**

IIA - CU - PhD (Tech) Public Ph.D viva-voce examination

वक्ता Speaker: Sireesha Chamarthi

शीर्षक Title: High Precision radial velocity studies on VBT Echelle Spectrograph

सार Abstract

The Echelle spectrograph operating at Vainu Bappu Telescope (VBT) is a general-purpose instrument designed for high-resolution spectroscopy. The motivation of the thesis is to study the limitations of the spectrograph and enhance the RV precision without altering the existing design and primary usage. The primary improvement in the RV capabilities of the spectrograph was possible by an instrument upgrade. The other major RV limitation was the lack of repeatability of the moving components in the spectrograph. A Zemax based ray trace model was developed to correct for the positional variations of the optical components. Apart from this, to eliminate the instrument drifts during observations, an iodine absorption cell was integrated with the spectrograph. A generic algorithm was developed that uses iodine exposures to correct for the instrumental drifts from RV estimates. Finally, with all the upgrades mentioned above, the RV precision limits of the spectrograph were pushed to a few 10-100 ms−1 regime. The technique was validated on a well-studied exoplanet-hosting star. Later, efforts were made towards the implementation of the iodine cell forward modelling technique to push the RV precision limits to a few ms−1 level. The procedure was validated using synthetic stellar spectra. The algorithm was developed on an open-source platform in Python to increase the accessibility of the approach.

गुरुवार Thursday 10, दिसंबर December 2020

Time: 3:30PM

Remotely online

सभी का स्वागत है All are welcome

Meeting link
https://us02web.zoom.us/j/83946176409?pwd=Q05LMDR1bTlvVUIyR2I2ZklKWmg4Zz09

Meeting ID: 839 4617 6409
Passcode: 723370