



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

स्नातक अध्ययन मंडल **Board of Graduate Studies.**

STUDENT SEMINAR
(Part of Comprehensive Examination)

Speaker: Mr Ajay Kumar Saini.

शीर्षक Title: The Atmospheres of Cool Hydrogen Deficient Stars And Related Objects

सार Abstract

Hydrogen-deficient carbon stars (HdCs), as the name suggests, are characterized by atmospheres that are poor in hydrogen and rich in carbon. When compared to a normal star, HdCs' optical spectra show very weak presence or absence of hydrogen Balmer lines for their effective temperatures. The process that is responsible for the origin of these stars, which transforms a normal star into a H-poor HdC star, is still a mystery. For several decades, there were just about 5 known HdCs. However, note that there exists yet another class of hydrogen deficient stars known as R Coronae Borealis stars (RCBs). Unlike HdCs, RCBs exhibit remarkable photometric variability by undergoing unpredictable light decline (up to about 9 mag in visual) in a matter of few weeks and recovery to their maximum light in about few to several months. It is heartening that a recent survey has reported about 27 new HdCs, a sixfold increase in their number than the earlier known (Tisserand et al. 2022). Warner (1967) provides the abundances of five earlier known HdC stars but with outdated observational methods and abundance analysis techniques. And, there are no measurements available for the elemental abundances of newly discovered HdC stars to date. Detailed abundance analysis serves as a crucial observational constraint on theoretical models concerning the formation and evolution of these peculiar stars. In this regard, we conducted a fine abundance analysis of a new warm HdC star, A980 (2MASS47 18113561+0154326), using a high-resolution spectrum obtained from Hanle Echelle Spectrograph (HESP), mounted on 2-m Himalayan Chandra Telescope (HCT) in Hanle, India. I will present the findings from our analysis that includes a significant discovery of a previously unknown element identified in the observed spectra of these peculiar stars, and the misclassification of A980 as an HdC star.

सोमवार Monday 23, सितम्बर September 2024

Time: 02:30 PM

Venue: प्रेक्षागृह Auditorium

सभी का स्वागत है All are welcome.