



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:** Aritra Chakrabarty

शीर्षक **Title:** Observation and Characterization of Extra-Solar Planets Using Indian Facilities

सार Abstract

This thesis aims at exploring the emerging field of detection and characterization of extra-solar planets using cutting-edge observational techniques such as transit photometry and transit spectroscopy. We have used the 2m Himalayan Chandra Telescope and the 1.3m J. C. B. Telescope for the photometric follow-up observations of the transit events of some confirmed giant close-in planets (hot Jupiters) such as WASP-33b, WASP-50b, HAT-P-36b, etc. Leveraging the large apertures of both the telescopes and applying techniques such as wavelet denoising and Gaussian process regression through our state-of-the-art algorithms, we refined the physical properties of the planets with more precise values than reported earlier. Besides, another important aspect of the project was the theoretical modeling of the atmospheres of the hot Jupiters to predict the nature of their transmission and emission spectra. I will present the consistent models for transmission spectra that we have developed by including the effects of diffused scattering of transmitting light in the atmosphere as well as the thermal emission from the night-sides of the ultra-hot Jupiters. These models will be indispensable in the near future to precisely model the bulk amount of high-quality observational data to be obtained from the upcoming missions such as JWST, ARIEL, among others.

सोमवार **Monday Wednesday 14, फरवरी February 2022**

Time: 11:00AM

Remotely online

सभी का स्वागत है **All are welcome**

Join Zoom Meeting

<https://zoom.us/j/98721913543?pwd=VnRoNjkwSzVPalorek8wdVpYZWs4QT09>

Meeting ID: 987 2191 3543

Passcode: 562873