



DEPARTMENT OF PHYSICS
INDIAN INSTITUTE OF TECHNOLOGY KANPUR

Physics Seminar

Exploring the Fascinating World of Exoplanets

Abstract

For centuries, humans have wondered whether planets exist beyond our Solar System. Today, this question has become a remarkable scientific reality, with more than 6,000 confirmed exoplanets discovered around other stars. These planets exhibit an extraordinary diversity in size, temperature, composition, orbital architecture, and atmospheric properties, ranging from highly irradiated hot Jupiters to small planets in more temperate environments. Such diversity raises fundamental questions about how planetary systems form and evolve, and how the properties of planets are shaped by their interactions with their host stars and neighboring planets.

Answering these questions requires observing planets that are far too distant to be seen directly in most cases. Several methods are available to detect and characterize these distant worlds. In particular, repeated transit observations can reveal small deviations in the expected transit times, known as transit timing variations (TTVs). These variations arise from gravitational interactions between planets and can provide important information about planetary masses, orbital architectures, and dynamical evolution. Together, these observational techniques are helping to build a more complete picture of planetary systems beyond our own. The discovery of increasingly diverse and extreme exoplanets, along with the capabilities of upcoming missions and facilities, offers exciting opportunities to explore how planetary systems form, evolve, and differ from our Solar System.

Speaker



Dr. Shraddha Biswas
National Tsing Hua
University (NTHU), Taiwan

ALL ARE CORDIALLY INVITED



FB-382 (Prof. Amal Kumar Raychaudhuri
Seminar Room)



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