



Physical Research Laboratory, Ahmedabad

Special Colloquium 18-07

- Speaker :** Dr. Nikku Madhusudhan
Reader in Astrophysics and Exoplanetary Science, Institute of Astronomy,
University of Cambridge
- Title :** Chemical Characterization of Extrasolar Planets
- Time :** Thursday, 12 July 2018, 16.00 hrs.
- Venue :** K. R. Ramanathan Auditorium, PRL

Abstract

Exoplanetary discoveries in the past two decades have unveiled an astonishing diversity in the physical characteristics of exoplanetary systems, including their orbital properties, masses, radii, equilibrium temperatures, and stellar hosts. Exoplanets known today range from gas-giants to nearly Earth-size planets, and some even in the habitable zone of their host stars. Recent advances in exoplanetary spectroscopy and theoretical methods are now leading to unprecedented constraints on the physicochemical properties of exoplanetary atmospheres, interiors, and their formation conditions. I will discuss the latest developments and future prospects of this new era of exoplanetary characterization. In particular, I will present some of the latest constraints on atmospheric chemical compositions of exoplanets, made possible by state-of-the-art high-precision observations from space and ground, and their implications for atmospheric processes and formation conditions of exoplanets. The emerging framework for using atmospheric elemental abundance ratios for constraining the origins and migration pathways of giant exoplanets will be discussed along with their implications for smaller rocky planets. A survey of theoretical and observational directions in the field will be presented along with several open questions on the horizon.

The Speaker

Dr Nikku Madhusudhan is a Reader in Astrophysics and Exoplanetary Science at the Institute of Astronomy at the University of Cambridge, UK. His research interests include the atmospheres, interiors, and formation conditions of extrasolar planets. He is known for pioneering the theoretical modelling and inverse techniques for measuring atmospheric properties of exoplanets. His results have led to the first statistical constraints on various atmospheric processes/properties in exoplanets, including chemical abundances, and using them to investigate exoplanetary formation and evolutionary mechanisms.

Tea at 15:30 hrs.
ALL ARE WELCOME

