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## **ICTS Astrophysics & Relativity Seminar**

**Title** : The host environments of compact binaries

**Speaker** : Aditya Vijaykumar (Canadian Institute for Theoretical Astrophysics, Canada)

**Date** : Thursday, 31 July 2025

**Time** : 3:30 PM (IST)

**Abstract** : When, where, and how compact binaries form is still a mystery, and observations from the LIGO-Virgo-KAGRA detectors are starting to shed light on this. In this talk, I will discuss ways of probing host environments of these binaries. I will show how the redshift evolution of the binary black hole merger rate can be used to constrain the parameter space of the host galaxies of such mergers. I will also discuss how incorrect assumptions on the nature of host galaxies can bias the inference of cosmological parameters. Time permitting, I will show some recent results on a research program I started while at ICTS—that of probing host environments using signatures of the binary centre-of-mass kinematics on the gravitational wave signal.

**Venue** : Feynman Lecture Hall

Zoom Link: <https://icts-res-in.zoom.us/j/93966798100?pwd=9okRVsjiQz9qYEWkWN0j9WpzBXtuz.1>

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