



## ICTS Thesis Defense Seminar

- Title** : Gravitational wave astronomy of merging compact binaries: Effect of subdominant modes of gravitational radiation
- Speaker** : Mukesh Kumar Singh (ICTS-TIFR, Bengaluru)
- Date** : Tuesday, 17 December 2024
- Time** : 2:00 PM (IST)
- Abstract** : Templates modeling just the dominant mode of gravitational radiation are generally sufficient for the unbiased parameter inference of near-equal-mass compact binary mergers. However, neglecting the subdominant/higher modes can bias the inference if the binary is significantly asymmetric, or has misaligned spins. In the first part of my synopsis, I will demonstrate the impact of neglecting the subdominant modes in the parameter estimation of non-spinning binary black hole mergers on the inference of their population-level properties such as mass and merger redshift distributions. Later, I will elucidate the use of subdominant modes, in addition to the dominant mode typically used in templated real-time searches, to produce significant improvements in detections and skyarea localisations in early-warning time for a range of asymmetric-mass binaries. This will enable astronomers to capture any potential electromagnetic emissions during pre/during/after merger.
- Venue** : Online  
Zoom Link: <https://icts-res-in.zoom.us/j/99162256996?pwd=BDu6ENacWd3V81IPqIOEovx9XWe6FN.1>  
Meeting ID: 991 6225 6996  
Passcode: 171718