



## ICTS Synopsis Seminar

- Title** : Strong lensing of gravitational waves: A new probe of cosmology and the nature of dark matter
- Speaker** : Souvik Jana (ICTS-TIFR, Bengaluru)
- Date** : Thursday, 05 December 2024
- Time** : 10:00 AM (IST)
- Abstract** : Gravitational waves (GWs) can be deflected, or lensed, by massive celestial structures like galaxies and galaxy clusters while propagating from their source to detectors. A small fraction ( $\sim 0.1-1\%$ ) of the detectable GW signals will be strongly lensed, producing multiple images (copies) of the signal. During their operational time ( $\sim 10$  years), the proposed third-generation detectors are expected to detect millions of GW events, with tens of thousands strongly lensed. The precise number of detected lensed events and the distribution of the time delay between lensed images will contain imprints of cosmological parameters and the nature of dark matter. We develop a Bayesian method to perform cosmography and investigate the nature of dark matter using strongly lensed GWs and explore potential systematic errors, and prospective constraints from future observations.
- Venue** : Madhava Lecture Hall  
Zoom Link: <https://icts-res-in.zoom.us/j/98354668272?pwd=ko0bE88TEfkHJR0p701ght5SLfyJGS.1>  
Meeting ID: 983 5466 8272  
Passcode: 275126