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ICTS Astrophysics & Relativity Seminar

- Title** : Observability of eccentricity in merging black hole binaries using gravitational waves
- Speaker** : Mukesh Singh (Cardiff University)
- Date** : Thursday , 08 October 2026
- Time** : 03:30 PM (IST)
- Abstract** : Although most observed compact binary mergers, such as binary black holes, are expected to circularize before entering the sensitivity band of the ground-based gravitational wave detectors, dynamical interactions in dense star clusters can lead to a fraction of these binaries with non-negligible eccentricity at the time of detection. Measuring eccentricity can, therefore, help in distinguishing between dynamical and isolated formation channels of compact binaries. In this talk, I will quantify the observability of eccentricity in a population of merging compact binaries by identifying power in eccentric harmonics and compare our predictions with the claims of eccentricity measurements in gravitational-wave detections. I will also demonstrate how computationally efficient eccentric harmonics enable us to accurately constrain the contribution of the globular cluster formation scenario to current gravitational-wave observations. Additionally, I will briefly discuss the potential use of eccentric harmonics to develop computationally efficient searches for eccentric compact binaries.
- Venue** : Feynman Lecture Hall
Zoom Meeting: <https://icts-res-in.zoom.us/j/94006158396?pwd=dqqaOdLzIyUrIQqILnRtYCY2cbGQxd.1>
Meeting ID: 940 0615 8396
Passcode: 989283