

ICTS Astrophysical Relativity Seminar

- Title : Precision measurements aiding gravitational waves and dark matter research
- Speaker : Nancy Aggarwal (Northwestern University, USA)
- Date : Wednesday, 21 October 2020
- Time : 02:00 pm (IST)
- Abstract : Current ground-based gravitational-wave (GW) detectors are measuring displacements at the quantum limit. I will summarize the current work on the quantum measurements frontier in the LIGO collaboration and show that it is possible for a macroscopic, room-temperature system to have low enough Brownian motion so as to exhibit measurable quantum effects. If time permits, I will provide a sneak-peak my recent endeavors on the hunt for axions, dark matter, and high-frequency GWs. I will talk about a miniature 10-300 kHz GW detector using levitated nanoparticles and possible GW sources at these frequencies. I will also summarize an experiment to look for spin-dependent forces beyond the standard model mediated by the axion. Placing limits on this interaction requires the precision to measure an equivalent magnetic field of 10^{18} T. This necessitates use of multiple cutting-edge research enterprises, each with its own set of prerequisites, all integrated into one setup.
- Online Seminar : Please click on the below link to join the seminar
<https://zoom.us/j/94939069387?pwd=ZHRYSIR5bmhvUHNJRGIpengyQIVuQT09>
Meeting ID: 949 3906 9387
Passcode: 527157