



ICTS Seminar (ONLINE)

Title : Quantum sensing and cooling in the modern era: towards resolving quantized energy exchanges at the level of a single graviton

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Date : Friday, 17th November, 2023

Time : 02:00 PM (IST)

Abstract : I will give a brief overview of measurement and control, and ground state cooling strategies for quantum systems across different scales. I will then discuss what such capabilities for massive quantum systems may enable us to do: the inference of quantized energy exchanges between gravitational waves and matter at the level of a single graviton. The quantization of gravity is widely believed to result in gravitons -- particles of discrete energy that form gravitational waves. However, their detection has so far been considered impossible. I will show that stimulated and spontaneous single-graviton processes can become relevant for massive quantum acoustic resonators. I will discuss how this allows us to infer quantized energy exchanges between gravitational waves and matter at the level of a single graviton. In analogy to the discovery of the photo-electric effect for photons, such signatures can provide the first experimental clue of the quantization of gravity.

Venue : Please click on the below link to join the seminar

<https://zoom.us/j/94929111406?pwd=ZFMyb3dlRnJDTWM1STVuZFNLy2ZiQT09>