ICTS Statistical Physics and Condensed Matter Seminar

Title : Quantized Transport in Periodically Driven Topological Systems

Speaker : Rekha Kumari (ICTS-TIFR, Bengaluru)

Date : Tuesday, 06 January 2026

Time : 4:00 PM (IST)

Abstract : Periodically driven quantum systems can host a wide range of nonequilibrium phases with no direct static analogs, including topological phases unique to time-dependent lattices. While the topology of such phases is well understood in closed systems, its manifestation in experimentally measurable transport remains an open and actively explored problem. In this talk, I discuss how steady-state transport in driven systems coupled to external reservoirs can encode underlying Floquet topology. From a general nonequilibrium perspective, I explain why transport responses restricted to a single Floquet zone are typically non-quantized due to photon-assisted processes and nonequilibrium occupations. I then show how incorporating contributions from drive-induced sidebands restores quantized transport responses and enables access to topological information beyond that of static systems. These results clarify the conditions under which transport measurements can reliably probe Floquet topology and provide general insights relevant for designing experiments in driven open quantum systems.

Venue : Feynman Lecture Hall