

Invited talk - Beyond Einstein: Search for New Gravitational Physics - Sudipta Sarkar, IIT Gandhinagar

Friday 22 August 2025 16:00 (1 hour)

Einstein's General Theory of Relativity (GR) has remained remarkably successful under a century of observational tests. However, various theoretical considerations increasingly indicate that GR may represent a low-energy effective limit of a more fundamental gravitational theory. This seminar will explore gravitational phenomena that extend beyond the Einsteinian framework by examining a range of possible modifications and generalizations of GR. Emphasis will be placed on maintaining theoretical consistency, ensuring unitarity, causality and stability while also addressing potential observational consequences in strong-field regimes, gravitational wave signals, and black hole dynamics. Particular emphasis will be placed on identifying imprints in black hole spacetimes, such as modifications in quasinormal mode spectra and in tidal Love numbers, which could offer critical empirical windows into possible modifications of gravity at a fundamental level.

Session Chair : Kartik Prabhu