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TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Astrophysics and Relativity Seminar

Title : Beyond Einstein: Search for New Gravitational Physics

Speaker : Sudipta Sarkar (Indian Institute of Technology Gandhinagar)

Date : Thursday, 24 July 2025

Time : 3:30 PM (IST)

Abstract : 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.

Venue : Feynman Lecture Hall

Zoom Link: <https://icts-res-in.zoom.us/j/92960657583?pwd=huW7U9IIBH1YUv3rfigvNxtsakOuUi.1>

Meeting ID: 929 6065 7583

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