ICTS | INTERNATIONAL CENTRE for THEORETICAL SCIENCES

TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Mathematics Seminar

Title : Solitons on Vaidya Spacetime and Hypersurfaces in Pseudo-Euclidean Space

Speaker : Savita Rani (ICTS-TIFR, Bengaluru)

Date : Monday, 11 August 2025

Time : 2:00 PM (IST)

Abstract : This talk presents recent research on two distinct topics: solitons on Vaidya spacetimes and biconservative hypersurfaces in pseudo-Euclidean spaces. First, we investigate the existence and non-existence of Ricci solitons, conformal Ricci solitons, and Yamabe solitons on Vaidya spacetime. Solitons represent special solutions to geometric flow equations and are a key tool for studying the evolution of a manifold's geometry. Our findings establish conditions for the existence and non-existence of these solitons on Vaidya spacetime, a specific solution to Einstein's field equations describing a radiating star. Second, we examine biconservative hypersurfaces with a constant norm of the second fundamental form. We begin by analyzing 4-dimensional hypersurfaces M_r^4(r = 0, 1, 2, 3, 4) in the 5-dimensional pseudo-Euclidean space E_s^5(s = 0, 1, 2, 3, 4, 5). These results are then generalized to n-dimensional hypersurfaces M_r^n(r = 0, 1, . . . , n) in the pseudo-Euclidean space E_s^{n+1} (s = 0, 1, . . . , n + 1). The talk will conclude with a brief overview of our ongoing research and future plans in these areas.

Venue : Feynman Lecture Hall
Zoom Link: https://icts-res-in.zoom.us/j/99171729265?pwd=5FIbS5liKVblNeZhgkTQby3uE215Cf.1
Meeting ID: 991 7172 9265
Passcode: 112211