ICTS Seminar

Title : Beyond the Parabola: Building Reduced Models for Thin-Film Flows

Speaker : Sanghasri Mukhopadhyay (International Institute of Information Technology Bangalore)

Date : Friday, 20 November 2026

Time : 11:30 AM (IST)

Abstract : Thin geometry provides a small parameter, but it does not uniquely determine a reduced model. This chalk talk will trace the construction of thin-film equations from the governing fluid dynamics to descriptions involving a few evolving fields. Starting with mass conservation and long-wave scaling, I will derive the Benney equation and then introduce the weighted-residual approach. I will pay particular attention to the velocity profile across the film: how it is represented, how it closes the evolution equations, and how it changes when additional structure is retained. This will lead to adjustable formulations in which the assumed profile becomes an explicit modeling choice. I will discuss how asymptotic consistency, linear stability, and nonlinear wave comparisons provide different tests of the resulting model.

Venue : Emmy Noether Seminar Room
Zoom Meeting: https://zoom.us/j/99414568063?pwd=PieW0xocmeEfljE4yv4K6FrJUPKDHe.1
Meeting ID: 994 1456 8063
Passcode: 203050