ICTS Open Seminar

Title : Stability studies on the shallow water equations

Speaker : Mukesh Singh Raghav, (ICTS-TIFR, Bengaluru)

Date : Wednesday, 19th July 2023

Time : 11:00 AM (IST)

Abstract : The β-plane approximation of the rotating shallow water equations is widely used to study the characteristics of equatorial atmospheric and oceanic waves. In this talk, I will draw the contrasts in the properties of waves between the approximated system and the system under the full spherical geometry. I will first consider the system in the framework of linear modal stability analysis which involves an eigen-decomposition of the governing operator into normal modes and summarising the spectrum and structure of the modes.

I will then shift the focus to my non-normal stability analysis which deals with an investigation of the response of the system to small perturbations for short time. I will highlight the fundamental difference between the property of the governing operator in the two systems to show that, contrary to the β-plane system, the spherical system exhibits a significant short time amplification of the perturbation energy.

Venue : Emmy Noether Seminar Room & Online
Zoom link: https://icts-res-in.zoom.us/j/83122729524?pwd=VHpLTnNxZjFpSHZXSDI3YXJkeTh1UT09
Meeting ID: 831 2272 9524
Passcode: 191920