ICTS String Seminar

Title	:	Exact solutions of matrix models and string theories
Speaker	:	João Carlos Rodrigues (Instituto Superior Tecnico, Portugal)
Date	:	Wednesday, 29 October 2025
Time	:	3:30 PM (IST)

Abstract : Hermitian matrix models, together with their double-scaling limits, offer powerful frameworks for studying non-perturbative phenomena across string theory. Despite significant advances, exact global solutions remain elusive due to intricate analytic structures and complex phase behaviour. To address this, we construct local transseries solutions that capture both perturbative and non-perturbative contributions. Using a novel technique, we reorganize transseries sectors to manifest background independence, improve convergence, and simplify resummation. These solutions deepen the understanding of non-perturbative effects by showing how transseries can be explicitly resummed into finite, fully non-perturbative results. Moreover, by determining all Stokes data and the associated connection formulae, we promote the transseries to global exact solutions across all phases, laying the groundwork for studying phase transitions, dualities and broader applications within string theory. Finally, we make some connections to unitary matrix models.

Venue	:	Emmy Noether Seminar Room
		Zoom Link: https://icts-res-in.zoom.us/j/88092766911?pwd=R3ZrVk9yeW96ZmQ4ZG9KRzVhenRKZz09
		Meeting ID: 880 9276 6911
		Passcode: 232322