ICTS | INTERNATIONAL CENTRE for THEORETICAL SCIENCES

TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Seminar

Title : Resurgence and Partial Theta Series

Speaker : David Sauzin (Institute of Celestial Mechanics and Computation of the Ephemerides, Paris)

Date : Friday, August 05, 2022

Time : 11:00 am (IST)

Abstract : Following arXiv:2112.15223 with L. Han, Y. Li, S. Sun, I will show how partial theta series, i.e. functions of the form $\Theta(\tau):=\sum f(n)e^{\{i\pi\tau n^2/M\}}$ with $f:\mathbb{Z}\to\mathbb{C}$ an M-periodic function (or the product of a power of n by such function), give rise to divergent asymptotic series at every rational point of the boundary of their domain of definition $\{\Im\tau>0\}$. I will discuss the summability and resurgence properties of these series by means of explicit formulas for their formal Borel transforms, and the consequences for the modularity properties of Θ, or its ``quantum modularity'' properties in the sense of Zagier's recent theory. Interesting examples stem from the study of Gukov-Pei-Putrov-Vafa invariants and Witten-Reshetikhin-Turaev invariants for the Poincaré homology sphere (cf. [Gukov-Putrov-Marino, arXiv:1605.07615]) or more generally Seifert homology 3-spheres ([Andersen-Mistegaard, J. Lond. Math. Soc. 2022]).

Venue : Hybrid Mode

Offline: Madhava Lecture Hall

Online: Please click on the below link to join the meeting

https://icts-res-in.zoom.us/j/85460711317?pwd=R0ZheXFmakFORWZEM3NHOUdaWnlWdz09
Meeting ID: 854 6071 1317
Passcode: 252522