SEMPARIS – Séminaires en région parisienne

http ://string.lpthe.jussieu.fr/semparis/

LPENS Particle physics phenomenology and cosmology

Mardi 4 Novembre 2025, 14 :00
LPENS, L378
Domaines : hep-th

Titre : *Exact Solutions of Matrix Models and String Theories*

Orateur : **Marina David (KU Leuven)**

Résumé : *String theories are generally defined through strictly perturbative, asymptotic genus expansions, and the problem of non-perturbative completion is generically challenging. Matrix models and their double-scaling limits to string theories are relatively tractable in this regard, and have seen a surge of research interest due to their connection to black hole physics and supersymmetric gauge theory. I will present a large N description of Hermitian matrix model partition functions, based on spectral geometry and resurgent analysis, that accounts for all non-perturbative physics at play and is fully background independent. I will show that resurgence requires the inclusion of both positive and negative tension D-branes, and renders this initially asymptotic large N solution well- defined. Analytic continuation to arbitrarily strong coupling requires connection formulae, which we show to be given by the topological string connection formulae of Iwaki and Mariño. These ingredients put together lead to precise matches with finite N quantities. I will then present some early results on extensions of this work to matrix model correlation functions.*