Laboratoire de Physique Théorique et Hautes Energies

Unité Mixte de Recherche (UMR 7589) de Sorbonne Université et du CNRS

SEMINAIRE du LPTHE

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Southampton

ling the analytic structure of observables : from local asymptotics to phase transi

The perturbative expansions of many physical quantities are divergent, and defined only as asymptotic series. It is well known that this divergence reflects the existence of nonperturbative, exponentially damped contributions, such as instanton effects, which are not captured by a perturbative analysis. This connection between perturbative and non-perturbative contributions of a given physical observable can be systematically studied using the theory of resurgence, allowing us to construct a full non-perturbative solution from perturbative asymptotic data.

In this talk I will start by reviewing the essential role of resurgence theory in the description of the analytic solution behind an asymptotic series, and its relation to the so-called Stokes phenomena and phase transitions. I will then exemplify how these techniques can be applied to to the Lee-Yang zeros in the context of matrix models, a subject of great interest in both mathematics and physics.

Bibliothèque du LPTHE, tour 13/14, 4ème étage

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