

Laboratoire de Physique Théorique et Hautes Energies

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

SEMINAIRE du LPTHE

Jeudi 5 Octobre 2017, 11:00

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LPTHE

Horn's problem, from classical to quantum

Horn's (classical) problem deals with the following question : what can be said about the spectrum of eigenvalues of the sum $C=A+B$ of two Hermitian matrices of given spectrum ? Curiously this problem is intimately related to the "quantum" problem : given two irreducible representations of $SU(n)$, which irreps appear in their tensor product ?

The support of the spectrum of C is well understood, after a long series of works from Weyl (1912) to Knutson and Tao (1999), and the classical problem is known to provide an asymptotic approach of the quantum one. Here I show how an explicit computation based on a well-known matrix integral enables one to determine the probability distribution of the eigenvalues of C , and sheds some new light on the relation between the classical and quantum problems.

Bibliothèque du LPTHE, tour 13/14, 4^{ème} étage

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