

Conference: "Integrability and Randomness in Mathematical Physics"
Jean-Morlet Chair
CIRM Luminy - 8-12 April 2019

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Title: Optimal global rigidity estimates in unitary invariant ensembles

Abstract: A fundamental question in random matrix theory is to understand how much the eigenvalues of a random matrix fluctuate.

I will address this question in the context of unitary invariant ensembles, by studying the global rigidity of the eigenvalues, or in other words the maximal deviation of an eigenvalue from its classical location.

Our approach to this question combines extreme value theory of log-correlated stochastic processes, and in particular the theory of multiplicative chaos, with asymptotic analysis of large Hankel determinants with Fisher-Hartwig symbols of various types.

In addition to optimal rigidity estimates, our approach sheds light on the extreme values and on the fractal geometry of the eigenvalue counting function.

The talk will be based on joint work in progress with Benjamin Fahs, Gaultier Lambert, and Christian Webb.