



复旦大学数学科学学院

数学综合报告会

报告题目: Gap probability of the circular unitary ensemble with a Fisher-Hartwig singularity

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报告时间: 2020-11-23 星期一 14:30--15:30

报告地点: 腾讯会议 ID: 789 513 617

摘要:

We consider the circular unitary ensemble with a Fisher-Hartwig singularity on the unit circle. By studying the asymptotics of the Toeplitz determinants, we show that the probability of finding no eigenvalues near the Fisher-Hartwig singularity for a random matrix in the ensemble can be explicitly evaluated via an integral of the Hamiltonian of the coupled Painleve V system. Moreover, the large gap asymptotics are derived by evaluating the total integral of the Hamiltonian. In particular, we reproduce the large gap asymptotics of the confluent hypergeometric-kernel determinant obtained by Deift, etc.. This is a joint work with Yu-Qiu Zhao.

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