

On the density of complex eigenvalues of sub-unitary scattering matrices.

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What is the density of eigenvalues for a finite-size diagonal block of a resolvent of a large random matrix, with the spectral parameter chosen in the vicinity of the real axis?

I will explain how this mathematical question is motivated by real experiments in wave-scattering systems, where due to absorption the associated scattering matrix is sub-unitary, hence moduli of its eigenvalues are nontrivial.

Then I will present the results for the mean density of those moduli in the framework of random matrix models of quantum chaotic scattering.

Relations to the density of complex eigenvalues of GUE resolvent blocks and eventually to the density of resonance poles of the scattering matrix in the complex energy plane will be discussed and exploited.

Orateur: FYODOROV, Yan