Systematic approach to statistics of chaotic resonances

Yan Fyodorov

Essen, Germany

Abstract

It is shown how to solve the problem of resonance statistics in systems with broken time-reversal invariance by deriving the joint probability density of all resonances in the framework of a random matrix approach and calculating explicitly all n-point correlation functions in the complex plane. In particular, we establish the Ginibre-like statistics of resonances for many open channels. Our method is a combination of Itzykson-Zuber integration and a variant of nonlinear $\sigma-$model and can be applied when the use of orthogonal polynomials is problematic.

References: Y.V. Fyodorov and B.A. Khoruzhenko Phys.Rev.Lett. v. 83 (1999) 65