

abstract

ANALYSIS AND MATHEMATICAL PHYSICS SEMINAR

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

Using the spectral multiplicities of the standard torus, we endow the Laplace eigenspace with Gaussian probability measure. This induces a notion of a random Gaussian Laplace eigenfunctions on the torus. We study the distribution of nodal length of the random Laplace eigenfunctions for high eigenvalues ("high energy limit").

It is standard to compute that the expected length is commensurable with the square root of the eigenvalue. It turns out that the asymptotic behaviour of the variance has to do with the distribution of the spectral frequencies on the unit circle. It is known that for a generic sequence of energy levels the frequencies are equidistributed on the unit circle. We were able to obtain a precise asymptotic form of the variance for such an equidistributed sequence (our statement is a little weaker). In addition, we were able to construct a sequence of energy levels ("Cilleruelo sequence") whose asymptotic behaviour is different.

This work is joint with Manjunath Krishnapur and Par Kurlberg.