Workshop "Mathematical aspects of quantum chaos"
Atelier «Aspects mathématiques du chaos quantique»
June 2-6, 2008/**2 au 6 juin 2008**

Dynamical and universal properties of the spectral function

Iosif Polterovich
Département de Mathématiques et de Statistique
Université de Montréal
C.P. 6128, succ. Centre-ville
Montréal (Québec), H3C 3J7

iosif.polterovich@umontreal.ca

Abstract

The spectral function of the Laplacian on a Riemannian manifold has been actively investigated for more than fifty years. It plays an important role in various problems: for instance, it is used to study the asymptotic distribution of eigenvalues and to prove estimates on eigenfunctions. The talk focuses on the asymptotic behaviour of the spectral function. In particular, I will show that while pointwise growth of the spectral function depends on the dynamics of the geodesic flow, the average growth has universal nature and is determined by the dimension of a manifold. Some open problems concerning almost periodic properties of the spectral function will be also discussed.

The talk is based on a joint work with Hugues Lapointe (Université de Montréal) and Yuri Safarov (King's College London).