



*Institute of Mathematical Research
Department of Mathematics*

GEOMETRY SEMINAR

Spectral theory of the $\bar{\partial}$ -Neumann Laplacian and applications

Professor Siqu Fu
Rutgers University, Camden, USA

Date: June 7, 2012 (Thursday)

Time: 4:00 – 5:00pm

Venue: Room 210, Run Run Shaw Bldg., HKU

Abstract

The $\bar{\partial}$ -Neumann Laplacian is an elliptic operator with a non-coercive boundary condition in several complex variables. Motivated by Mark Kac's famous question "Can one hear the shape of a drum?", we study the interplay between spectral behavior of the $\bar{\partial}$ -Neumann Laplacian and geometry of the underlying manifold. It turns out that one can "hear" more geometry with the $\bar{\partial}$ -Neumann Laplacian than with the usual Dirichlet or Neumann Laplacians. In this talk, we will discuss results in this direction and their connections to quantum physics and wavelets. In particular, we will talk about a recent joint work with Boyong Chen in which spectral theory of complex Laplacian is used to establish stability of the Bergman kernel on a tower of coverings of complex manifolds.

All are welcome