THE UNIVERSITY   OF HONG KONG

Institute of Mathematical Research
Department of Mathematics

Mini-Workshop on Geometry

13 November, 2013
Room 210, Run Run Shaw Building, HKU

9:30 – 10:20   **Will Kirwin** (Universität zu Köln)

Quantizing the geodesic flow via Wick-rotated dragging projection

Abstract: A common folk theorem states that the quantization of the geodesic flow on a compact Riemannian manifold via a BKS "dragging projection" yields the Laplacian plus a scalar curvature term. The standard construction, though, is plagued by convergence issues. In this talk, I will explain how these issues can be avoided with the help of adapted complex structures.

10:30 – 11:20   **Yang Chen** (University of Macau)

Determinant of Toeplitz plus Hankel matrices, non-linear difference equations, and Painlevé VI

Abstract: I will talk about the large n expansion of a Hankel determinant which arises from a deformation the 'Jacobi' ensembles. I will then discuss applications to moduli spaces in QCD.

11:30 – 12:20   **River Chiang** (National Cheng Kung University, Tainan)

Non-fillable contact structures

Abstract: A bLob, introduced by Massot, Niederkrüger and Wendl, is a higher dimensional analog of an overtwisted disk. Its existence in a contact manifold obstructs fillability. In this talk, we would discuss an equivariant construction of such objects. On the other hand, using a left-handed fractional twist, we can construct contact open books which are non-fillable. In these manifolds it seems difficult to locate any bLob. The first part is a joint work with Y. Karshon; the second part is a joint work with F. Ding and O. van Koert.

Lunch Break

14:00 – 14:50   **Kai Leung Chan** (The University of Hong Kong)

A-infinity structure from Witten deformation

Abstract: Given a Morse function, Witten suggested to construct a twisted de Rham complex to study the topology of a manifold which is known as the Witten deformation. We will further apply this idea and homological perturbation lemma to obtain an A-infinity structure which corresponds to the A-infinity structure in the Morse category.

Organizer: Siye Wu