THE UNIVERSITY   **OF HONG KONG**

Institute of Mathematical Research
Department of Mathematics

Geometry Seminar

April 9, 2010 (Friday)

Rm 210, Run Run Shaw Bldg., HKU

Professor Reyer Sjamaar
Cornell University

Induction of representations and twisted K-theory

3:00 – 3:50pm

Abstract

Let G be a group and H a subgroup. Frobenius showed in 1898 how to "enlarge" a representation of H to a representation of G. His method, now called induction, rapidly became a useful technical tool in algebra and harmonic analysis and was adapted by others in various ways. For instance, in 1965 Bott made a systematic study of induction methods based on invariant elliptic differential operators in the context of compact Lie groups, which led to generalizations of the Weyl character formula. I will review and update Bott's work and discuss some applications to K-theory.

3:50 − 4:00   *Tea Break*

Professor Andrey Todorov
University of California, Santa Cruz/CUHK

Mirror Construction of Harmonic Beltrami Differentials with respect to Calabi-Yau metric

4:00 – 4:50pm

Abstract

Royden, Schumacher and Siu proposed a beautiful construction of harmonic (0,1) forms with values in the vector fields of type (1,0) on a Kähler-Einstein or CY manifold. Harmonic Beltrami differentials play very basic role in deformation of complex structure. In this talk I will briefly review Kodaira-Spencer-Kuranishi deformation Theory. The uniqueness of the solution of Calabi conjecture implies that we have two types of deformations of CY metrics. We can fix the class of CY form and deform the complex structure. The other way to deform the metric is the fix the complex structure on the CY manifold and deform the class of cohomology. I will show how one can use the deformation of the classes of cohomology on a fixed CY manifold to construct Harmonic Beltrami differentials. This correspond to the construction of VHS on the complexified Kähler cone of CY manifold.

All are welcome