THE UNIVERSITY   OF HONG KONG

Institute of Mathematical Research
Department of Mathematics

Mini-Workshop on Algebraic Geometry

January 22, 2015, Thursday
Room 210, Run Run Shaw Building, HKU

10:30 – 11:30   **Chen Yifei** (Academy of Mathematics and Systems Science, China)

On the subadditivity of Kodaira dimension of fibration in positive characteristic field

Abstract: In the field of complex numbers, Iitaka conjectures that for a fibration $f: X \to Y$, Kod dimension satisfies an inequality $\kappa(X) \geq \kappa(Y) + \kappa(F)$, where F is the geometric generic fiber of f. The conjecture is usually denoted by $C_{n,m}$, where $n = \dim X$, $m = \dim Y$. We shall discuss the subadditivity of Kod dimension on an algebraically closed field of positive characteristic. In a joint work with Lei Zhang, we show that it is true if $\dim F = 1$. In the joint work with Caucher Birkar and Lei Zhang, we show that $C_{3,1}$ holds in the algebraically closure of F_p, if $p > 5$.

11:45 – 12:45   **Lam Yan Ting** (Oxford University, UK)

Derived equivalences between total spaces of vector bundles and dg-quivers

Abstract: We give a recipe on how to construct equivalences between the derived categories of coherent sheaves on the total spaces of vector bundles and the derived categories of representations of dg-quivers. In the special case when the total spaces of vector bundles are noncompact Calabi-Yau, we show the corresponding dg-quivers are equipped with "superpotentials" which determine the differentials on the dg-quivers.

15:00 – 16:00   **Zhang Tong** (University of Alberta, Canada)

Geography of complex irregular 3-folds of general type

Abstract: In this talk, I will introduce the notion of geography of algebraic varieties of general type. After reviewing some basic results on geography of surfaces of general type, I will discuss how to generalize the two dimensional results to 3-folds of general type and then introduce the Bombieri-Horikawa-Severi inequalities and the Cornalba-Harris-Xiao type inequality for irregular 3-folds.

16:15 – 17:15   **Zhu Zhixian** (Korea Institute for Advanced Study, Korea)

LC center of higher codimension and adjunction

Organizer: Ngaiming Mok & Fei Ye