THE UNIVERSITY   **OF HONG KONG**

Institute of Mathematical Research
Department of Mathematics

Geometry Seminar

August 13, 2019 (Tuesday)

Room 210, Run Run Shaw Bldg., HKU

Professor Yujiro Kawamata

University of Tokyo

On non-commutative deformations

2:30 – 3:30pm

I will consider deformations of coherent sheaves on algebraic varieties. It is sometimes more natural to consider deformations over non-commutative base when I consider formal deformations or the formal completion of the moduli space. I will talk about examples and applications to perverse coherent sheaves and semi-orthogonal decompositions.

Professor Mao Sheng

University of Science and Technology of China

Decomposition theorem for intersection de Rham complexes

4:00 – 5:00pm

Deligne-Illusie gives an algebraic proof of E_1 degeneration of the Hodge to de Rham spectral sequence in characteristic zero, first proved via the theory of harmonic forms in differential geometry. The basic device is the decomposition theorem for de Rham complex in positive characteristic. One major achievement in the nonabelian Hodge theory in positive characteristic, established by Ogus-Vologodsky, is the generalization of decomposition theorem to general coefficients. In this talk, I will report our further generalization of decomposition theorem for intersection de Rham complexes, aiming at an algebraic proof of E_1-degeneration theorem of the spectral sequence associated to the holomorphic intersection de Rham complex coming from a semistable family over $\mathbb{C}$, proved by Zucker in the curve case, Cattani-Schmid-Kaplan and Kashiwara-Kawai in general by L^2-harmonic forms and SL_2-orbit theorem. This is a joint work with Zhang Zebao.

All are Welcome