Algebraic Geometry Day at NCTS(South)

Date: 11:00-16:00, Monday October 11, 2010
Time: R204, 2F, NCTS, NCKU

11:00 – 12:00   The Cohomological Crepant Resolution Conjecture
Prof. Wan Keng Cheong (NCKU)

Abstract : We will discuss Ruan's Cohomological Crepant Resolution Conjecture (CCRC) and prove that CCRC holds in the case of symmetric products of S where S is any smooth toric surface. That is, the equivariant Chen-Ruan cohomology ring of the n-fold symmetric product $Sym^n(S)$ of S is isomorphic to the equivariant quantum corrected cohomology ring of the Hilbert scheme $Hilb^n(S)$ of n points in S for any positive integer n.

12:00 – 13:30   Lunch

13:30 – 14:30   Local positivity and syzygies of smooth projective varieties
Prof. Kungho Chan (NCKU)

Abstract : In 1993, Ein and Lazarsfeld gave a result that the (N_p) condition holds for the bundle $K_X + (n + 1 + p)A$ when A is very ample on X where X is a smooth complex projective variety of dimension n. In the same paper, they conjectured that the result still holds for $K_X + (n + 2 + p)D$ when D is ample. Since then, there has not been much progress on this problem. In early 2010, Hwang and To observed that there is a relation between local positivity on an abelian variety and its projective normality of suitable embeddings. Later, Lazarsfeld, Pareschi and Popa extended this result to higher syzygies by the language of multiplier ideals.
In this talk, we review these results and see how much light they can shed on the conjecture.

14:30 – 15:00   Break

15:00 – 16:00   Algebra and Dynamical Systems
Eugene Z. Xia (NCKU)

Abstract : We study the Torelli-Johnson group actions on the representation varieties of 4-holed sphere and the 2-holed torus and present a computer-aided proof that these actions are ergodic.