Mathematics, Statistics, and Computer Science **@ UIC**

Algebraic Geometry Seminar

On higher dimensional extremal varieties of General Type

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Abstract: (joint work with Jungkai Chen) Relations among fundamental invariants plays an important role in algebraic geometry. In this talk, we consider the relations between canonical volume and genus for varieties of general type. We prove an inequality for a n-dimensional minimal Gorenstein variety of general type and investigate the compelling extremal cae, when the inequality is an equality. These extremal varieties are natural higher dimensional analogue of Horikawa's surfaces whose invariants satisfy the equality in Noether's inequality. We prove that for extremal varieties of general type of arbitrary dimension, their canonical linear systems are base point free. We give a characterization of these varieties. Moreover, we show that the deformation of these varieties remain in the same type. It is also proved that these extremal varieties of general type are simply connected, and are pluri-regular (in the smooth case). Optimal results on projective normality of pluri-canonical linear systems will also be dealt in this talk. These results give a complete generalization of Horikawa's results in the Annals for all dimensions!

Friday, November 13 at 1:00 PM in SEO 427