Department of Mathematics
University of Notre Dame

Kangjin Han - Daegu Gyeongbuk Institute of Science and Technology

ALGEBRAIC GEOMETRY AND COMMUTATIVE ALGEBRA SEMINAR

Speaker: Kangjin Han

Daegu Gyeongbuk Institute of Science and Technology

Date: Tuesday, March 22, 2022

Time: 2:30 PM

Location: 258 Hurley Hall

Zoom URL: NA

Lecture Title:

Rank 3 quadratic generation of Veronese varieties

Abstract

Let X be any nondegenerate projective variety over an algebraically closed field K with $char(K) \neq 2$ and L be any very ample line bundle on X. We say that (X, L) satisfies property $QR(k)$ if the homogeneous ideal of $X \subset \mathbb{P}H^0(X, L)$ can be generated by quadrics of rank at most k. It is well-known that many classical varieties such as any Segre-Veronese embeddings, rational normal scrolls and curves of high degree satisfy $QR(4)$. In this talk, we consider rank 3 quadratic generation for Veronese varieties. We first introduce some methods to produce rank 3 quadrics and explain how to prove any Veronese variety $\nu_d(\mathbb{P}^n)$ satisfies $QR(3)$ by applying these methods. We also show some generalization of it to any variety under some positive embedding. Some families of examples with $QR(k)$ for low k will be presented in the talk as well.