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ALGEBRAIC GEOMETRY AND COMMUTATIVE ALGEBRA SEMINAR

Speaker: Cinzia Casagrande
Università di Torino

Date: Tuesday, February 15, 2022

Time: 2:30 PM

Location: Zoom

Zoom URL: notredame.zoom.us/j/97739336655?pwd=QmUxd3V2Rndyd0VFNlc0RFBxK0xPQT09

Lecture Title:

Fano manifolds with Lefschetz defect 3

Abstract

We will talk about a structure result for some (smooth, complex) Fano varieties X, which depends on the Lefschetz defect $\delta(X)$, an invariant of X defined as follows. Consider a prime divisor D in X and the restriction $r : H^2(X, R) - > H^2(D, R)$. Then $\delta(X)$ is the maximal dimension of $\ker(r)$, where D varies among all prime divisors in X. If $\delta(X) > 3$, then X is isomorphic to a product SxT, where S is a surface. When $\delta(X) > 3$, X does not need to be a product, but we will see that it still has a very rigid and explicit structure. More precisely, there exists a smooth Fano variety T with $\dim T = \dim X - 2$ such that X is obtained from T with two possible explicit constructions; in both cases there is a P^2-bundle Z over T such that X is the blow-up of Z along three pairwise disjoint smooth, irreducible, codimension 2 subvarieties. This structure theorem allows to complete the classification of Fano 4-folds with Lefschetz defect at least 3. This is a joint work with Eleonora Romano and Saverio Secci.