

SEMINARIO DI GEOMETRIA

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Dipartimento di scienze Matematiche,
Politecnico di Torino,
AULA BUZANO

Daniele Faenzi

(Universit  de Pau)

The representation type of Segre-Veronese varieties

Given a smooth, positive-dimensional projective variety X , polarized by a very ample line bundle H , whose coordinate ring is Cohen-Macaulay, a particularly interesting class of sheaves on X is that of ACM bundles, namely E is such if $H^i(E(t))$ vanishes for all integers t and all $0 < i < \dim(X)$. It turns out that there are few varieties admitting only finitely many indecomposable ACM bundles (up to a twist and isomorphism): projective spaces, smooth quadrics, rational normal curves, and two exceptional cases: the Veronese surface in \mathbb{P}^5 and the cubic scroll in \mathbb{P}^4 .

I will show that the Segre-Veronese embedding by $\mathcal{O}(d_1, \dots, d_s)$ of the product of s projective spaces of dimensions n_1, \dots, n_s supports families of arbitrarily high dimension of indecomposable ACM bundles (i.e. this variety is of wild representation type) except for the above cases and for a the Segre embedding of a line and a smooth conic. This last variety is of tame representation type, i.e. all families of indecomposable ACM bundles have dimension at most 1. This is the only known variety of this kind, besides the elliptic curve. This is a joint work with F. Malaspina.