

The Picard group of small codimension subvarieties.

Enrique Arrondo

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Abstract

Barth-larsen theorem implies that any smooth subvariety X of dimension r in P^N has its Picard group isomorphic to the Picard group of P^N when $N < 2r - 1$. In this talk we will present a method (introduced in the PhD thesis of Jorge Caravantes) to decide when the same result is true if we replace P^N with another ambient space Y of dimension N . This method produces positive answers when Y is a Grassmannian of (projective) lines or a product of a projective space by itself (improving previous results by Barth and van de Ven and Sommese). We will also discuss the cases in which our method does not give such a positive answer, namely when Y is a Grassmannian of linear spaces of dimension at least two (studied by Nicolas Perrin) or a smooth quadric.