

Séminaire d'Algèbre, Topologie et Géométrie
Jeudi 15 Septembre à 14h00
Salle II

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Title : *Grothendieck-Lefschetz theory, Set-Theoretic Complete Intersections and Rational Normal Scrolls.*

Abstract : Using the Grothendieck-Lefschetz theory (SGA2-1962), the theory of Picard schemes and a recent generalization (due to Cutkosky) of a result of SGA2 concerning the algebraic simple connectedness, we prove that many closed subvarieties of \mathbb{P}^N of dimension ≥ 2 need at least $N - 1$ equations to be defined in \mathbb{P}^N set-theoretically, i.e. their arithmetic rank is $\geq N - 1$. As applications we give a number of relevant examples. In the second part of the paper we prove that the arithmetic rank of a rational normal scroll of dimension $d \geq 2$ in \mathbb{P}^N is $N - 2$, by producing an explicit set of $N - 2$ homogeneous equations which define these scrolls set-theoretically. The characteristic of the ground field is arbitrary.