

MULTIPLICITY-2 NONSINGULAR SUBVARIETIES ON SINGULAR VARIETIES

Maria R. Gonzalez-Dorrego
Universidad Autonoma de Madrid (Madrid, Spain)

Let k an algebraically closed field, $\text{char} k = 0$. Let Z be a reduced irreducible nonsingular $(n - 1)$ -dimensional variety such that $2Z = X \cap F$, where X is a normal n -fold with canonical singularities, F is a $(N - 1)$ -fold in P^N , such that $Z \cap \text{Sing}(X) \neq \emptyset$. We study the singularities of X through which Z passes. We also consider Fano cones.

We discuss the construction of some vector bundles and the resolution property of a variety. Does every algebraic variety Y have the resolution property, i.e. every coherent sheaf on Y is a quotient of a locally free sheaf of finite rank? If Y has the resolution property, one could construct a resolution of any coherent sheaf F on Y by vector bundles. It is known that the question has an affirmative answer in certain cases. In other cases, it requires the existence of certain vector bundles, like the toric vector bundles for complete toric varieties.