

SEMINARIO DI GEOMETRIA

1 Marzo 2018, h.10.00-11.00

Politecnico di Torino,
Dipartimento di Scienze Matematiche,
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The Aluffi's Algebra of a projectively embedded curve

The Aluffi algebra defines in an algebraic framework a characteristic cycle of a hypersurface in intersection theory. Let $J \subset I$ ideals of a commutative ring R with unit. The Aluffi algebra of the ideal $I/J \subset R/J$ is the R/J -algebra

$$\mathcal{A}_{R/J}(I/J) := \text{Sym}_{R/J}(I/J) \otimes_{\text{Sym}_R(I)} \mathcal{R}_R(I),$$

where $\text{Sym}_B(_)$ and $\mathcal{R}_B(_)$ denote respectively the symmetric and the Rees algebra of an ideal \mathfrak{a} in a ring B . In this talk, we focus on the case that J is the defining ideal of a projective curve and I is the Jacobian ideal of J , which defines the singular subscheme of the curve. We prove that the Aluffi algebra of nodal and cuspidal plane curves is isomorphic to the *naive blowup* and the Aluffi algebra of a rational normal curve is isomorphic to the corresponding Rees algebra which is a Cohen–Macaulay normal algebra of minimal multiplicity. Also we will discuss and essay to explain the structure of the Aluffi algebra for some special smooth and singular projective curves.