Seminario di Geometria

Giovedì 26 Maggio 2022, ore 14:15

AULA M3

Dipartimento di Matematica e Fisica
Università degli studi Roma Tre
Largo S.L. Murialdo 1

Speaker: Prof. Remke Kloosterman (Padova)

Titolo: *Deformations of hypersurfaces with non-constant Alexander polynomial*

Let X be an irreducible hypersurface in $\mathbb{P}^n$ of degree d. If X has isolated singularities then $h^i(X) = h^i(\mathbb{P}^n)$ holds for $i \notin \{n-1, n, 2n-2\}$.

Most hypersurfaces with isolated singularities satisfy $h^n(X) = h^n(\mathbb{P}^n)$. In this talk we consider hypersurfaces with semi-weighted homogeneous (e.g., ordinary multiple points or ADE-singularities) such that $h^n(X) > h^n(\mathbb{P}^n)$ holds.

We show that if (d, n) is not in an explicit finite list then the equianalytic deformation space of X is not T-smooth, i.e., this space is nonreduced or its dimension is larger than expected. A similar statement holds true for X if the d-fold cover Y of $\mathbb{P}^n$ ramified along X satisfies $h^{n+1}(Y) > h^{n+1}(\mathbb{P}^{n+1})$.

This latter result generalizes classical examples of B. Segre of degree $6m$ curves in $\mathbb{P}^2$ with $6m^2$, $7m^2$, $8m^2$ and $9m^2$ cusps and deformation space larger than expected.