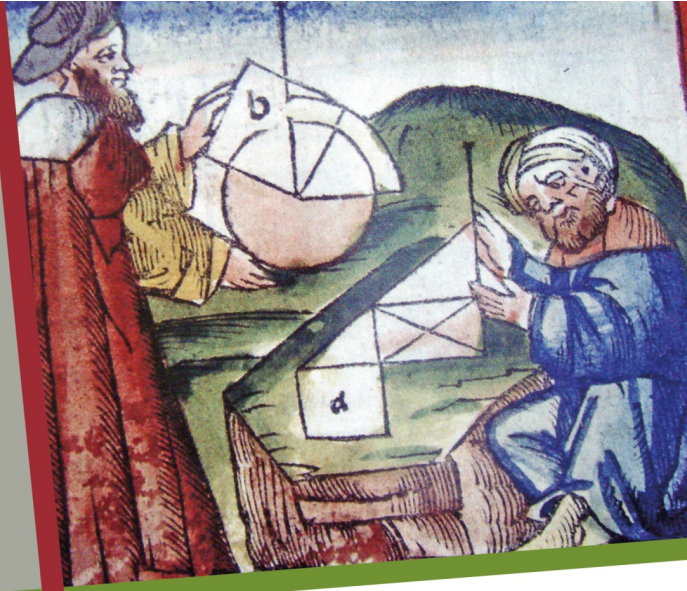




UNIVERSITÀ DEGLI STUDI  
DI TRENTO

Dipartimento di Matematica



# SEMINARI

Wednesday November 12th, 2025 – at 13:30

Seminar Room 1, Via Sommarive 14

Geometry Seminar (GeoSem)

**Filippo Favale**

(Università di Pavia)

## About Hessian varieties of cubic hypersurfaces

### Abstract:

Let  $X = V(f) \subset \mathbb{P}^n$  be a hypersurface of degree  $d$ . From  $f$  one can construct the *Hessian matrix*  $H_f$ , whose entries are homogeneous forms of degree  $d - 2$ . This gives rise to a natural filtration of  $\mathbb{P}^n$  according to the rank of  $H_f$ . The top (non-trivial) stratum of this filtration is the *Hessian variety*  $\mathcal{H}_f$ , namely the locus of points in  $\mathbb{P}^n$  where  $H_f$  fails to have maximal rank.

In this talk, I will present some joint results with G. P. Pirola and D. Bricalli about the geometry of Hessian varieties of cubic hypersurfaces. In particular, we will describe the singular locus of the Hessian variety of a general cubic fourfold, and we will discuss the characterisation of smooth cubic threefolds and fourfolds whose Hessian variety is reducible. If time permits, I will also mention a recent related work in progress.

**Contact persons:** R. Pignatelli, E. Postinghel, L. Solá Conde

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### CONTATTI

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