

Seminari Informal de Matemàtiques de Barcelona

Speaker: Martí Salat Moltó.
University: Universitat de Barcelona.

Date: Wednesday, 14th of November.
Schedule: 13:00, *coffee break*; 13:20, talk.
Place: B1 classroom, *Facultat de Matemàtiques* of UB.
Language: Spanish.

Title: Osculating spaces and Lefschetz properties.

Abstract: Let $X \in \mathbb{P}^N$ be an algebraic variety. The *sth* osculating space of X at a point $p \in X$ is the vector space $T_p^{(s)}X$ spanned by all the *sth* partial derivatives of a local parametrization of X at p . Hence it can be seen as a natural generalization of the well-known notion of tangent space. It is a wide and longstanding problem to study and classify varieties whose osculating space is *defective* (i.e. it does not reach the maximal dimension).

In the first part of this talk we will recall the notion of osculating space and we will see some examples. In the second part we will explore the connection made by Mezzetti, Ottaviani and Miró-Roig. This connection explains why some varieties have a defective osculating space by means of the *-a priori* unrelated notion – of the *weak Lefschetz property*. This result motivates the definition of *Togliatti systems*. Finally, if the time allows us to do so, we will give an insight to the classification problem of Togliatti systems using combinatorial methods of Toric varieties.

Qui som? El SIMBa és un seminari jove organitzat pels estudiants de doctorat de les Facultats de Matemàtiques i Informàtica de Barcelona. Està dirigit a estudiants de doctorat, de màster i, fins i tot, dels darrers cursos de grau. El nostre objectiu és donar a conèixer la recerca que estem fent, així com adquirir coneixements d'altres àrees de les matemàtiques diferents de les pròpies.

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