## INSALATE DI MATEMATICA

## presents

## 22/03/2023 SIMONE PESATORI

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Coincident root loci and the moduli space of rational elliptic surfaces



## Abstract:

Elliptic fibrations are strongly characterized by their singular fibers. We analyze the moduli spaces of elliptic surfaces over the projective line  $\mathbb{P}^1$ , and construct a stratification of these spaces in terms of the singular fibers that the surfaces have. In order to do that we need to investigate a very natural problem. Let  $\mathbb{P}^d$  be the space parametrizing homogeneous degree d polynomials in two variables: what happens if the roots of the polynomials collapse? Given a partition  $\sigma$  of d, how is the locus in  $\mathbb{P}^d$  corresponding to polynomials having roots with the multiplicities prescribed by  $\sigma$ ?

 $Keywords: \ \ \text{algebraic geometry} \cdot elliptic \ fibrations \cdot singular \ fibers \cdot moduli \ spaces$ 

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"Obvious" is the most dangerous word in mathematics. (Eric Temple Bell)