



SCUOLA  
NORMALE  
SUPERIORE

## SEMINARIO DI MATEMATICA

**Giovedì 14 marzo 2019**  
ore 15:00

Scuola Normale Superiore  
Pisa  
Aula Tonelli

**Michiel Hochstenbach**  
(TU Eindhoven)

Terrà un seminario dal titolo:

### **“Solving polynomial systems by determinantal representations”**

**Abstract:**

Zeros of a polynomial,  $p(x)=0$ , are often determined by computing the eigenvalues of a companion matrix: a matrix  $A$  which satisfies  $\det(A-xI)=p(x)$ .

In this talk we consider polynomial systems, in particular in 2 variables:  $p(x,y)=0$ ,  $q(x,y)=0$ .

We look for a determinantal representation for such a bivariate polynomial: matrices  $A, B, C$  such that  $\det(A-xB-yC)=p(x,y)$ .

This means that we can compute the zeros of the system by solving a 2-parameter eigenvalue problem.

This approach, which already goes back to a theorem by Dixon in 1902, leads to fast solution methods, as well as a multitude of interesting open research questions.

This is mainly joint work with Bor Plestenjak (Ljubljana), and additionally several colleagues in algebra, among which Ada Boralevi (Torino).

Tutti gli interessati sono invitati a partecipare.

Classe di Scienze