SCUOLA
NORMALE
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PISA

SEMINARIO DI MATEMATICA

martedì 28 ottobre 2008

ore 16.00

Scuola Normale Superiore
Pisa
(Aula Bianchi)

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Terrà un seminario dal titolo:

"Undecidability and elliptic curves"

Abstract

Hilbert's Tenth Problem is the following:
find an algorithm which, given a polynomial $f(x_1, \dots, x_n)$ in $\mathbf{Z}[x_1, \dots, x_n]$, tells whether or not it has a zero $(x_1, \dots, x_n)$ in $\mathbf{Z}^n$.
It was shown in 1970 by Y. Matiyasevich, building on earlier work by M. Davis, H. Putnam and J. Robinson, that such an algorithm does not exist.
In other words: general diophantine equations over the integers are undecidable.

This problem can be generalized by replacing **Z** by a different ring.
In this talk we will concentrate on fields (usually the hardest case).
For finite fields, algebraically closed fields, **R** and $\mathbf{Q}_p$ one has decidability for polynomial equations; in all other cases where the answer is known
(such as $\mathbf{R}(t)$ or $\mathbf{C}(t_1, t_2)$, we have undecidability. Perhaps surprisingly, elliptic curves play an important role in many of these undecidability proofs.
In this talk, I will give an overview of the ideas in these proofs and in particular how elliptic curves are used.

Tutti gli interessati sono invitati a partecipare.

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