GRADUATE SCHOOL
IN MATHEMATICAL SCIENCES

UNIVERSITÀ DEGLI STUDI DI MILANO
SCUOLA DI DOTTORATO IN INFORMATICA
Via Comelico 39/41, 20135 Milano

Graduate School in Mathematical Sciences of the University of Milan and
Graduate School in Computer Sciences of the University of Milan

Dr. Leonardo De Moura

Microsoft Research, Redmond (WA)

Phd course

"Tools and algorithms in real algebraic geometry"

Abstract

"Decision methods for arithmetic are extensively used in the formal verification and analysis of software and cyber-physical systems, computer algebra, and formalized mathematics. In this course, we will cover several decision methods for fragments of arithmetic such as the elementary theories of algebra and geometry over the Real and Complex numbers. We will also cover fundamental results such as the undecidability of the elementary arithmetical theory of the integer numbers. We will examine methods based on Fourier-Motzkin elimination, Simplex, Cooper's procedure, Gröbner bases, Muchnik sign matrices, Sturm-Tarski based procedures and Cylindrical Algebraic Decomposition. The machinery developed should be of interest to computer scientists, logicians, algebraists and algebraic geometers. The course will presume only a basic grounding in first-order logic."

Calendar

The classes will be held May 13 to 17, from 14.30 to 17.30,
at the Sala di Rappresentanza of the Department of Mathematics of the University of Milan,
Via C. Saldini n.50 – 20133 Milano

UNIVERSITÀ DEGLI STUDI DI MILANO

DIPARTIMENTO DI MATEMATICA