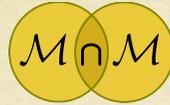




Università degli studi
dell'Aquila



M&MoCS

International Research Center for
Mathematics & Mechanics of Complex Systems

Seminar Announcement

THE INFINITY COMPUTER AND NUMERICAL COMPUTATIONS WITH INFINITE AND INFINITESIMAL NUMBERS

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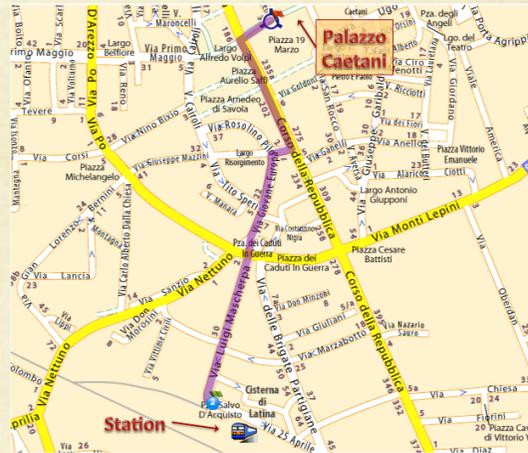
Friday 3 February 2012

Time: 15,00 - 17,00

Palazzo Caetani, Piazza XIX Marzo

04012, Cisterna di Latina (Lt)

Cisterna di Latina



Direction from Leonardo Da Vinci Airport (Fiumicino, Rome)
Catch Leonardo Express train direct to Termini station in Rome
(about 30 min);
take the train direct to Naples (train category **Regionale**) and get off
at Cisterna di Latina station (about 30 min).

Direction from Ciampino Airport (Ciampino, Rome)
Catch Ciampino train direct to Termini station in Rome
(about 15 min);
take the train direct to Naples (train category **Regionale**) and get off
at Cisterna di Latina station (about 30 min). Arriving at the
Cisterna di Latina station walk towards Palazzo Caetani
(about 5 min).

Abstract

The seminar introduces a new methodology allowing one to execute numerical computations with finite, infinite, and infinitesimal numbers on a new type of a computer – the Infinity Computer. The new approach is based on the principle ‘The part is less than the whole’ introduced by Ancient Greeks that is applied to all numbers (finite, infinite, and infinitesimal) and to all sets and processes (finite and infinite). It is shown that it becomes possible to write down finite, infinite, and infinitesimal numbers by a finite number of symbols as particular cases of a unique framework different from that of the non-standard analysis.

The new methodology evolves ideas of Cantor and Levi-Civita in a more applied way and introduces new infinite integers that possess both cardinal and ordinal properties as usual finite numbers. It gives the possibility to execute computations of a new type and simplifies fields of mathematics where the usage of the infinity and/or infinitesimals is necessary (e.g., divergent series, limits, derivatives, integrals, measure theory, probability theory, fractals, etc.). Numerous examples and applications are given. A number of results related to the First Hilbert Problem are established. In the seminar will be presented both operations that the Infinity Computer can execute and traditional computers are not able to perform and some of new areas of applications.

The Infinity Calculator using the Infinity Computer technology is presented during the talk. Additional information can be downloaded from the page <http://www.theinfinitycomputer.com>