A Short Course on
Generalized Functions and Mathematical Modeling

Vieri Benci

Università di Pisa & Centro Linceo Interdisciplinare "Beniamino Segre"

March 15–16, April 4–6, 2016

Program

March, Tuesday 15 (10:00 am – 12:30 pm), Attavanti room

- *Exposition of the main ideas through meaningful examples*
- *A generalization of the notion of limit: the Λ-limit*
- *Non-standard analysis*

March, Wednesday 16 (10:00 am – 12:30 pm), Attavanti room

- *Generalized solutions in PDEs*
- *Ultrafunctions*
- *Distributions*

April, Monday 4 (10:00 am – 12:30 pm), De Vecchi room

- *The structure of the space of ultrafunctions*
- *Hyperfinite bases*
- *The canonical space of ultrafunctions*

April, Tuesday 5 (10:00 am – 12:30 pm), De Vecchi room

- *The generalized Gauss' divergence theorem*
- *Applications to variational problems*
- *An application to the foundations of quantum mechanics*

April, Wednesday 6 (10:00 am – 12:30 pm), De Vecchi room

- *Difficulties in the study of evolution problems*
- *The generalized solutions of Burgers' equation*
- *Other approaches within non-Archimedean mathematics*

All lectures will be held at Argiletum, Università Roma Tre
Via Madonna dei Monti, 40 – 00184 Roma