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COLLOQUIO DE GIORGI

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"PDE aspects of the Navier-Stokes equations"

Abstract

Solutions of incompressible Navier-Stokes equations can exhibit a wide spectrum of different types of behavior. In various regimes, the equations contain as special limiting cases for example the classical heat equation, the non-linear Schroedinger equation, various other dispersive equations with strange dispersion relations, various non-trivial finite-dimensional dynamical systems, some classical geometric semilinear elliptic equations, etc. Recently an unexpected connection between control theory for parabolic equations and Navier-Stokes regularity emerged. In addition, when thinking about realistic fluid flows and applications, ideas from statistical mechanics enter the picture. In the lecture I will explain (a limited number of) some PDE aspects of these equations.

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