

DETERMINISTIC AND STOCHASTIC NAVIER-STOKES EQUATIONS

organized by
Yakov Sinai and Jonathan Mattingly

Workshop Summary

The meeting was successful in bringing together a number of different communities: probabilists, general PDE analysts, and specialists in fluids. In the time since the meeting, many people have commented to the organizers how it broadened their perspective and introduced them to topics they had not heard about. The program concentrated on defining the current state of the art in existence theory and exposing researchers to a number of ideas which had come from outside the standard communities. There was also a significant amount of discussion concentrating on stochastic models and how they might provide a context where progress could be made on “generic” behavior. A number of the problems sessions were successful (lots of active participation at the time) and have influenced later research. One such group centered around Hakima Bessaih has studied shell models because of the discussions. One of the organizers (Mattingly) has modified his own questions concerning inviscid limits after the discussions at the meeting.

The list of topics discussed, either in talks or in large or small group discussions, is extensive, and includes the following: 3D fluids, complex Navier-Stokes and singularities, transport with inertia, diatic models, stochastic considerations, pressure, numerics, degenerate forcing, random walks, and shell models.

Edriss Titi - 3D Fluids Uriel Frisch - Complex Navier Stokes and singularities Jeremie Bac - Transport with inertia Susan Friedlander - Diatic Models Yuri Bakhtin - Stochastic presentation on NS Gregory Sergin - Pressure and the Navier- Stokes equation Fabrice Planchon Isabel Gallagher - Regularity and split between norms K. Khanin - Stochastic Burgers B. Rozovskii C. Fefferman V. Yakhot - Numerics of 2D turbulence J. Mattingly - Degenerately Forced Navier Stokes Mina Ossiander - stochastic cascades applied to the navier-stokes equations Alain-Sol Sznitman - random walks in a random environment Andrei Biryuk - some existence results Tom Beale - Beale Kato Majda Eric Vanden Eijden - simple shell models Hakima Bessaih - stochastic vortex models