

PREFACE

The Navier–Stokes equations are the fundamental model of classical fluid mechanics. Although their mathematical investigation was started 70 years ago, the main questions are still open. The most famous problem concerns the regularity of weak solutions in the 3D evolutionary case and it is recognized to be one of the main challenges in recent mathematics.

A conference: “Regularity and other qualitative aspects of the Navier–Stokes equations” was held at Będlewo (near Poznań) from August 31 to September 6, 2003. The present volume summarizes ideas and results of current research in the area of regularity and qualitative properties of solutions to the Navier–Stokes equations. The main topics considered included the theory of semigroups, Schauder type estimates, existence of special solutions, Serrin type conditions, and other problems in the mathematical theory of incompressible fluids.

We would like to thank all participants of the meeting and all authors of the present volume for their contributions.

Piotr Mucha, Patrick Penel, Michael Wiegner and Wojciech Zajączkowski