

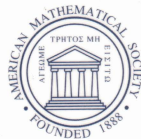
CONTEMPORARY MATHEMATICS

439

Recent Developments in Nonlinear Partial Differential Equations

The Second Symposium on Analysis and PDEs
June 7–10, 2004
Purdue University
West Lafayette, Indiana

Donatella Danielli
Editor



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Preface

In the present volume we have collected the proceedings of the 2nd Symposium on Analysis and PDEs, held at Purdue University, in West Lafayette, Indiana, on June 7-10, 2004. The symposium focused on recent developments in the theory and applications of nonlinear partial differential equations. Professors Lawrence C. Evans (University of California at Berkeley) and Carlos E. Kenig (University of Chicago) were the principal lecturers. They each delivered a four-lecture minicourse. Ten invited talks, given by leading researchers in the field, and several contributed ones complemented Evans' and Kenig's lectures.

This volume includes the lecture notes from the minicourses, as well as most of the invited talks. Some of the papers present original research work, whereas other authors give, in an expository fashion, a comprehensive account of their most recent endeavors.

We would like to express a heartfelt thank you to all of the speakers and participants for contributing to the success of the symposium. We gratefully acknowledge financial support from the National Science Foundation, the Institute for Mathematics and its Applications, and the Department of Mathematics at Purdue University.

Several people devoted time and energy to make the conference possible. We wish to thank Dawn Caldwell, Tao Luo, Shaun Ponder, and especially Julie Morris for her invaluable help with the organizational aspects. Many thanks also go to Christine Thivierge of the AMS for her patience and assistance in editing this volume.

About the Symposium on Analysis and PDEs

The Department of Mathematics periodically organizes the Symposium on Analysis and PDEs, whose focus is on developments in Analysis and Partial Differential Equations at the forefront of current international research. Each Symposium consists of two minicourses aimed at graduate students and recent Ph.D.'s, in conjunction with a number of lectures given by invited speakers on interrelated topics. In addition, young mathematicians have the opportunity to present contributed talks with subjects close to the main themes of the Symposium.

The spirit of this initiative is twofold. On the one hand, it aims at introducing prospective and young researchers to a larger mathematical community, and helping them to establish professional connections with key figures in their areas of interest. In addition, the international character of the Symposium fosters U.S. students' capabilities to engage in future international cooperative activities.

On the other hand, it brings together leading experts in the field, at different stages of their careers, to summarize the most recent progress in the field. It also

provides an opportunity to exchange ideas towards the solution of open questions and to formulate and develop new problems and avenues of research.

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This volume contains research and expository articles based on talks presented at the 2nd Symposium on Analysis and PDEs, held at Purdue University. The Symposium focused on topics related to the theory and applications of nonlinear partial differential equations that are at the forefront of current international research. Papers in this volume provide a comprehensive account of many of the recent developments in the field.

The topics featured in this volume include: kinetic formulations of nonlinear PDEs; recent unique continuation results and their applications; concentrations and constrained Hamilton–Jacobi equations; nonlinear Schrödinger equations; quasiminimal sets for Hausdorff measures; Schrödinger flows into Kähler manifolds; and parabolic obstacle problems with applications to finance.

The clear and concise presentation in many articles makes this volume suitable for both researchers and graduate students.

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