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Editorial

Waves 2005 Conference

In this special volume we present a selection of papers, based on talks presented at the Seventh International Conference on Mathematical and Numerical Aspects of Waves (WAVES'05) which took place at Brown University, Providence, RI, USA during the week of June 20–24, 2005.

Wave phenomena are ubiquitous in science and engineering. From the obvious and long-standing applications in hydrodynamics, through seismics, acoustic noise propagation and radio wave propagation, waves underlie many important scientific and engineering areas. Typically, the need to simulate devices based on wave physics requires the solution of an appropriate wave equation such as Maxwell's equations, or the acoustic or elastic wave equation.

In the late 1980s a group of researchers at INRIA-Rocquencourt, France, perceived the need for an international conference that would bring together engineers, scientists, and mathematicians working on fundamental aspects of computational and mathematical wave propagation. In response they organized the first International Conference on Mathematical and Numerical Aspects of Waves held in Strasbourg, France in 1991, with subsequent ones at University of Delaware, USA (1993); Mandelieu La Napoule, France (1995); Colorado School of Mines, USA (1998); Santiago de Compostella, Spain (2000); and University of Jyväskylä, Finland (2003).

While INRIA-Rocquencourt remains closely involved in the organization of the WAVES conferences, a major part of the organization is taken care of by a local organization committee at the host institution. For WAVES'05, the local committee consisted of David Gottlieb, Jan S. Hesthaven, and Chi-Wang Shu, all from Brown University, and Peter Monk from University of Delaware. This local team was complemented by Anne-Sophie Bonnet, Patrick Joly, Gary Cohen, Housseem Haddar and Eric Luneville, members of the research unity POems (INRIA/CNRS/ENSTA).

About 150 people attended the Seventh WAVES conference, presenting about 120 talks and with 8 invited plenary talks given by internationally renowned researchers. The quality of the presentations at WAVES conferences are monitored by a dynamic international scientific committee which is also tasked with ensuring that new ideas and emerging techniques are presented at the conference. This helps to ensure a very dynamic event with presentations covering a diverse range of topics.

This is clearly reflected in the special volume, consisting of 31 papers, covering areas such as inverse waves problems; methods for high-frequency problems; forward modeling techniques such as discontinuous Galerkin methods, high-order finite difference techniques, integral equations and their discretization, and absorbing boundary conditions. The applications are likewise diverse, including acoustics, electromagnetics, elastic waves, and various types of nonlinear wave problems. All papers presented in this special volume have undergone a rigorous review process, overseen by members of scientific committee, and the quality of this special volume is a testament to the hard work of this committee as well as numerous other anonymous reviewers.

We would like to thank our main sponsors of the meeting, the National Science Foundation (NSF), USA, and the US Airforce Office of Scientific Research (AFOSR), USA. Their support enabled us to support the participation of a significant number of students, young researchers, and unrepresented minorities and, thus, to enrich the atmosphere and diversity of the meeting.

Furthermore, we would like to sincerely thank Ms. Helene Chanut (INRIA) for setting up the conference review webpage and Dr. Gary Cohen for assembling the scientific program and the book of abstracts. This was a major step in making the event successful.

Finally, we would like to thank the conference secretary, Ms. Janice D’Amico, for all her help and assistance in arranging the conference and Ms. Laura Lurati and Mr. Lucas Wilcox, both from Brown University, for taking care of webpages, etc.

We hope you will find the papers interesting and look forward to seeing you at the Eighth International Conference on Mathematical and Numerical Aspects of Waves, currently planned to take place during July 2007.

Sincerely,

Organizing Committee of WAVES’05

Anne-Sophie Bonnet (CNRS, France)
 Gary Cohen (INRIA, France)
 David Gottlieb (Brown University, USA)
 Housseem Haddar (INRIA, France)
 Jan S. Hesthaven (Brown University, USA)
 Patrick Joly (INRIA, France)
 Eric Luneville (ENSTA, France)
 Peter Monk (University of Delaware, USA)
 Chi-Wang Shu (Brown University, USA)

Scientific Committee of WAVES’05

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B. Plamenevskii (Russia)	J. Rauch (USA)
G. Seriani (Italy)	I. Terrasse (France)
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