Preface

Asymptotic constructions and large-time asymptotic estimates for solutions to evolution equations of hyperbolic or more general p-evolution type are an active field of current research. We took this as an incentive to organise an international workshop on

Asymptotic Properties of Solutions to Hyperbolic Equations

at Imperial College London. It took place in March 2011 and included 32 speakers presenting current results of their work. We are grateful to EPSRC supporting this meeting within the Pathways to Impact Award scheme.

The papers collected in this volume are authored by participants of that meeting. They focus on different aspects of current research and are, in particular, centred around

- symbolic and other parametrix constructions;
- energy estimates in various function spaces;
- asymptotic behaviour of solutions to the Cauchy problem;
- microlocal analysis and Fourier integral operators;
- problems for strictly and non-strictly hyperbolic equations and systems and their non-linear aspects;
- hyperbolic constructions in different settings;
- applications: elasticity, general relativity, etc.

The aim of this volume is two-fold. On one hand it shall give an overview on the great variety of ongoing current research in the field and, therefore, allow researchers as well as students to grasp new aspects and broaden their understanding of the area. We put a particular emphasis on detailed proofs of results and completeness of presentations. On the other hand, all contained papers are full research papers presenting new results. This allows experts in the field to describe deeper inside views and will hopefully lead to further collaborative work in the area.

The papers are in alphabetical order.

The speakers at the above-mentioned workshop were Piero d'Ancona (Rome), Matania Ben-Artzi (Jerusalem), Nikolaos Bournaveas (Edinburgh), Massimo Cicognani (Bologna), Ferruccio Colombini (Pisa), Mihalis Dafermos (Cambridge), Claudia Garetto (London), Vladimir Georgiev (Pisa), Todor Gramchev (Cagliari), Günther Hörmann (Vienna), Maarten de Hoop (Purdue), Tynysbek Kalmenov (Almaty), Sergiu Klainerman (Princeton), Hideo Kubo (Tohoku), Tokio Matsuyama

(Tokyo), Michael Oberguggenberger (Innsbruck), Cesare Parenti (Bologna), Alberto Parmeggiani (Bologna), Luigi Rodino (Torino), Michael Ruzhansky (London), Daniele Del Santo (Trieste), Semyon Serovaisky (Almaty), Kanat Shakenov (Almaty), Sergio Spagnolo (Pisa), Mitsuru Sugimoto (Nagoya), Hiroyuki Takamura (Hakodate), Mirko Tarulli (London), Igor Trooshin (Tohoku), Gunther Uhlmann (Washington), Baoxiang Wang (Beijing), Jens Wirth (Stuttgart), and Ingo Witt (Göttingen). We thank all participants for making the meeting a success.

We point out that, in fact, the conference was also the 5th meeting in a series of international meetings devoted to "Function Spaces and Partial Differential Equations", initiated by the first two editors of this volume, where the four previous ones were held at:

- Osaka University, Japan, February 18–20, 2008;
- Imperial College London, UK, December 3–5, 2008;
- Nagoya University, Japan, September 28–October 1, 2009;
- University of Göttingen, Germany, June 14–17, 2010;

The following 6th meeting will take place at the Aalto University, Helsinki, Finland, in June 2012, and will be devoted to "Fourier analysis and pseudo-differential operators".

We would also like to thank other members of the organising committee of the conference and their contributions in different ways, in particular, Claudia Garetto for doing excellent organisational work, as well as PhD students Donal Connolly, David Rottensteiner, and Mirko Tarulli.

Michael Ruzhansky, Mitsuru Sugimoto, and Jens Wirth

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