Preface

The interactions between the theory of *pseudo-differential operators*, the *time-frequency analysis*, and the theory of *partial differential equations* have contributed to progress in all these areas and are an active field of current research. To facilitate further developments and links between these fields, the international conference "Fourier Analysis and Pseudo-Differential Operators", with applications to partial differential equations, was held at Aalto University near Helsinki, Finland, on 25–29 June 2012.

It was organised as a satellite meeting to the European Congress of Mathematicians that took place in Krakow the following week, and as the 6th meeting in the series "Fourier Analysis and Partial Differential Equations", with previous meetings taking place at University of Osaka (2008), Imperial College London (2008), Nagoya University (2009), University of Göttingen (2010) and, finally, Imperial College London (2011).

The conference attracted around 90 participants presenting recent results of their work, with a total of around 75 sectional and plenary talks. The papers collected in this volume are authored by participants of that meeting. They focus on different aspects of current research in the above-mentioned subjects and are, in particular, centred around the following topics:

- pseudo-differential operators in different settings;
- microlocal analysis and Fourier integral operators;
- pseudo-differential operators and noncommutative harmonic analysis;
- time-frequency analysis and its applications;
- linear and nonlinear evolution equations;
- hyperbolic equations and systems;
- dispersive, smoothing and Strichartz estimates;
- applications: wave models, control theory, stochastic analysis.

On one hand, the volume is aimed at being a rigorous presentation of recent research developments in these areas, as well as at emphasising interactions between them. As such, all the contributions are full research papers presenting new results. This allows experts in the field to describe the recent developments in their subjects, to present new results, and will hopefully lead to further collaborative work in the area. On the other hand, the volume gives an overview on the great variety of ongoing current research in several broad fields and, therefore, allows

researchers as well as students grasping new aspects and broadening their under-
standing of these areas. Therefore, the papers provide a wide scope of ideas and
detailed proofs of results.

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Michael Ruzhansky and Ville Turunen