

Preface

The ISAAC Group in Pseudo-Differential Operators (IGPDO) met again on July 13–18, 2009 at Imperial College London in England on the occasion of the Seventh Congress of the International Society for Analysis, its Applications and Computations (ISAAC). The special session for IGPDO turned out to be the largest session with over forty speakers filling out the entire schedule completely. Talks presented at the IGPDO session reflected the diversity of topics cutting across disciplines in the Analysis, Applications and Computations of Pseudo-Differential Operators.

This volume contains eighteen peer-reviewed papers related to the talks given at the IGPDO session. Chapters 1–3 feature a chapter on the adaptive wavelet computations of inverses of pseudo-differential operators (Q. Guo and M.W. Wong) and two chapters on the pseudo-differential operators on the unit circle (M. Pirhayati; S. Molahajloo). The latter two chapters pave the way towards the discretization and numerical computations of pseudo-differential operators. Chapters 4–7 are on pseudo-differential operators and boundary value problems on manifolds with singularities, non-smooth domains and Riemannian manifolds (B.-W. Schulze and M.W. Wong; B.-W. Schulze; V.B. Vasilyev; C. Iwasaki). Chapters 8–11 are devoted to concrete partial differential equations that are of interest in physics and geometry (J. Delgado; V. Catană; V.S. Rabinovich; R. DeLeo, T. Gramchev and A. Kirilov). Chapters 12–14 consist of chapters on microlocal analysis, hyperbolic equations and systems (Y. Chiba; W. Ichinose; K. Benmeriem and C. Bouzar). Chapters 15–18 are on topics related to Wigner transforms, Weyl transforms and localization operators (L. Cohen; L. Galleani; P. Boggiatto, E. Carypis and A. Oliaro; E. Cordero and F. Nicola).

In an era of interdisciplinary studies in academia fuelled by research and development for societal and global needs, the role of pseudo-differential operators in the mathematical, physical, biological, atmospherical, geological and medical sciences is vital. Underpinning novel *applications* are deep understanding in the *analysis* and efficient numerical *computations*. It is expected that new developments in Analysis, Applications and Computations of Pseudo-Differential Operators will deepen our understanding of science in general and hence improve the knowledge-based well-being of the world. Future developments of IGPDO are geared in the direction of interdisciplinarity.

Pseudo-Differential Operators: Analysis, Applications
and Computations

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2011, VIII, 308 p., Hardcover

ISBN: 978-3-0348-0048-8

A product of Birkhäuser Basel