

Preface

On the occasion of the Sixth Congress of the International Society for Analysis, its Applications and Computation (ISAAC), the ISAAC Group in Pseudo-Differential Operators (IGPDO) met again at the Middle East Technical University in Ankara, Turkey on August 13–18, 2007. Papers related to the talks given at the special session on pseudo-differential operators and invited papers from experts in the field are peer-reviewed for inclusion in this volume.

This volume consists of seventeen papers on pseudo-differential operators and related topics. Results on twisted Laplacians and their extensions, and the sub-Laplacian on the Heisenberg group are arranged together in the first three papers. Global analysis on manifolds with boundaries, pseudo-differential analysis on manifolds with singularities, and the ellipticity and Fredholmness of pseudo-differential operators are presented in the next three papers. Following these are three papers on hyperbolic equations and systems, Fourier integral operators and Colombeau algebras. Then there are three papers on exotic pseudo-differential operators and regularity results on quasi-elliptic operators and hypoelliptic operators. Two papers on the Stockwell transforms in time-frequency analysis are then given. The last three papers are devoted to pseudo-differential operators on the unit circle, the torus, $SU(2)$ and related results on sampling.

This volume should be useful to graduate students and researchers in mathematical analysis with applications in sciences and engineering. It is a valuable complement to the volumes “Advances in Pseudo-Differential Operators”, “Pseudo-Differential Operators and Related Topics” and “Modern Trends in Pseudo-Differential Operators” published in the same series edited by Professor Israel Gohberg in, respectively, 2004, 2006 and 2007. It should also be read in conjunction with the volume “Pseudo-Differential Operators: Partial Differential Equations and Time-Frequency Analysis”, Editors: Luigi Rodino, Bert-Wolfgang Schulze and M.W. Wong, Fields Institute Communications Series 57, American Mathematical Society, 2007 and the volume “Pseudo-Differential Operators: Quantization and Signals”, Editors: Luigi Rodino and M.W. Wong, Fondazione C.I.M.E., Firenze, Lecture Notes in Mathematics 1949, Springer, 2008.

In an era of explosive advances in quantitative sciences and information technologies, it is envisaged that mathematical analysis in general and pseudo-

differential operators in particular will be developed hand in glove with applications and computation in the physical, biological and medical sciences. This theme will play an important role in the forthcoming volumes on pseudo-differential operators originating from IGPDO.

The Editors

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Rodino, L.G.; Wong, M.W. (Eds.)

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