

PREFACE

This book continues the series of Proceedings dedicated to the *Quantum Mathematics International Conferences Series* and presents a number of selected refereed papers dealing with some of the topics discussed at its 10-th edition, Moieciu (Romania), September 10 - 15, 2007.

The *Quantum Mathematics* series of conferences started in the seventies, having the aim to present the state of the art in the mathematical physics of Quantum Systems, both from the point of view of the models considered and of the mathematical techniques developed for their study. While at its beginning the series was an attempt to enhance collaboration between mathematical physicists from eastern and western European countries, in the nineties it took a worldwide dimension, being hosted successively in Germany, Switzerland, Czech Republic, Mexico, France and this last one in Romania.

The aim of QMath10 has been to cover a number of topics that present an interest both for theoretical physicists working in several branches of pure and applied physics such as solid state physics, relativistic physics, physics of mesoscopic systems, etc, as well as mathematicians working in operator theory, pseudodifferential operators, partial differential equations, etc. This conference was intended to favour exchanges and give rise to collaborations between scientists interested in the mathematics of Quantum Mechanics. A special attention was paid to young mathematical physicists.

The 10-th edition of the *Quantum Mathematics International Conference* series has been organized as part of the SPECT Programme of the *European Science Foundation* and has taken place in Romania, in the mountain resort Moieciu, in the neighborhood of Brasov. It has been attended by 79 people coming from 17 countries. There have been 13 invited plenary talks and 55 talks in 6 parallel sections:

- *Schrödinger Operators and Inverse Problems* (organized by Arne Jensen),
- *Random Schrödinger Operators and Random Matrices* (organized by Frederic Klopp),

- *Open Systems and Condensed Matter* (organized by Valentin Zagrebnov),
- *Pseudodifferential Operators and Semiclassical Analysis* (organized by Francis Nier),
- *Quantum Field Theory and Relativistic Quantum Mechanics* (organized by Volker Bach),
- *Quantum Information* (organized by Dagmar Bruss).

This book is intended to give a comprehensive glimpse on recent advances in some of the most active directions of current research in quantum mathematical physics. The authors, the editors and the referees have done their best to provide a collection of works of the highest scientific standards, in order to achieve this goal.

We are grateful to the Scientific Committee of the Conference: Yosi Avron, Pavel Exner, Bernard Helffer, Ari Laptev, Gheorghe Nenciu and Heinz Siedentop and to the organizers of the 6 parallel sections for their work to prepare and mediate the scientific sessions of "QMATH10".

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The Editors
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