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Kyoto University
Spectral and Scattering Theory and Related Topics

edited by Setsuro Fujii and Tomio Umeda

April, 2010
Research Institute for Mathematical Sciences
Kyoto University
Spectral and Scattering Theory
and
Related Topics

December 3 ~5, 2008
edited by Setsuro Fujiie and Tomio Umeda

Research Institute for Mathematical Sciences
Kyoto University, Kyoto, Japan

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Preface

This volume of RIMS Kôkyûroku Bessatsu is collecting several research papers and survey articles contributed by invited speakers of the RIMS workshop

“Spectral and Scattering Theory and Related Topics”

which was held at RIMS (Research Institute for Mathematical Sciences), Kyoto University from December 3 through December 5 in 2008.

This workshop was a continuation of a series of workshops held every year since 1989. The main purpose of the workshop was, as usual, to provide a forum for the discussion of recent developments in the spectral and scattering theory and related fields.


At the present workshop, 12 lectures were given by specialists on operator theory, linear and nonlinear Schrödinger equations, wave equations, Dirac equations and quantum field theory. In particular, various problems, such as diagonalization modulo norm ideals, structure of spectrum, inverse scattering, long time asymptotics or singularities of the solutions, time operators, etc. were discussed.

The workshop was supported by RIMS. We would like to express our gratitude to the secretarial staff of RIMS for her help in the editing process.

Himeji in January, 2010

Setsuro FUJIIE, Tomio UMEEDA
University of Hyogo
Program

Spectral and Scattering Theory and Related Topics

December 3 (Wed) - December 5 (Fri), 2008
Lecture Hall (Room No. 115) of RIMS, Kyoto University

December 3rd (Wednesday)

13:30–14:30  Yuji NOMURA (Ehime University)
Takuya MINE (Kyoto Institute of Technology)
The spectrum of Schrödinger operators with periodic Aharonov-Bohm
magnetic fields

14:45–15:45  S.T. KURODA (University of Tokyo and Gakushuin University, emeritus)
Diagonalization modulo norm ideals, a review and some remarks

16:00–17:00  Hisashi NISHIYAMA (Osaka University)
Polynomial decay for the damped wave equation on partially rectangular
domains

December 4th (Thursday)

9:30–10:30  Asao ARAI (Hokkaido University)
Time operators in quantum field theory

10:45–11:45  Yasumichi MATSUZAWA (Hokkaido University)
Canonical Commutation Relations and Time Operators
13:30–14:30  Hiroshi ISOZAKI (Tsukuba University)
    Inverse scattering on noncompact manifolds

14:45–15:45  Michiyuki WATANABE (Tokyo University of Science)
    Two-dimensional inverse problems for Schrödinger equations with
    a complex coefficient

16:00–17:00  Kenichi ITO (Tsukuba University)
    Schrödinger equations on scattering manifolds and microlocal singularities

December 5th (Friday)

9:30–10:30  Pavel NAUMKIN (Universidad Nacional Autónoma de México)
    Large time asymptotics for cubic nonlinear Schrödinger equations

10:45–11:45  Tetsuo TSUCHIDA (Meijo University)
    Long-time asymptotics of heat kernels for one-dimensional
    elliptic operators with periodic coefficients

13:30–14:30  Haruya MIZUTANI (University of Tokyo)
    Dispersive estimates for Schrödinger equations in dimension one

14:45–15:45  Hiroshi ITO (Ehime University)
    Osanobu YAMADA (Ritsumeikan University)
    On the nonrelativistic limit of Dirac operators with potentials diverging
    at infinity
# List of Participants

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<td>Hideo TAMURA</td>
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<td>Tomio UMEDA</td>
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<td>Takuya WATANABE</td>
<td>Osanobu YAMADA</td>
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<td>Kazushi YOSHITOMI</td>
<td></td>
</tr>
</tbody>
</table>
Contents

PREFACE ................................................................. i

PROGRAM ............................................................... ii

LIST OF PARTICIPANTS ........................................ iv

1. Asao ARAI, Strong Time Operators in Algebraic Quantum Mechanics and
Quantum Field Theory ........................................... 1

2. Nakao HAYASHI, Pavel NAUMKIN, Asymptotics for large time of solutions
for cubic nonlinear Schrödinger equations ....................... 15

3. Hiroshi ISOZAKI, Yaroslav KURYLEV, Spectral theory and inverse problems
on asymptotically hyperbolic manifolds .......................... 29

4. Hiroshi T. ITO, Osanobu YAMADA, On the nonrelativistic limit of Dirac op-
erators with potentials diverging at infinity ..................... 75

5. Kenichi ITO, Shu NAKAMURA, Schrödinger equations on scattering mani-
folds and microlocal singularities .................................. 91

6. S.T. KURODA, Diagonalization modulo norm ideals; spectral method and
modulus of continuity ............................................... 101

7. Yasumichi MATSUZAWA, Canonical Commutation Relations and Time Op-
erators .............................................................. 127

8. Takuya MINE, Yuji NOMURA, The spectrum of Schrödinger operators with
periodic Aharonov-Bohm magnetic fields ......................... 135

9. Haruya MIZUTANI, Dispersive estimates for Schrödinger equations in dimen-
sion one .................................................................. 141

10. Hisashi NISHIYAMA, Notes on the Energy decay for damped wave equations
........................................................................ 153

11. Tetsuo TSUCHIDA, Long time asymptotics of heat kernels for one dimensio-
nal elliptic operators with periodic coefficients .................. 163

12. Michiyuki WATANABE, Two-dimensional inverse problems for Schrödinger
equations with a complex coefficient ............................ 173