ISSN 1881-6193

RIMS Kôkyûroku Bessatsu B57

Several aspects of microlocal analysis

edited by Naofumi Honda, Yasunori Okada and Susumu Yamazaki

May, 2016
Research Institute for Mathematical Sciences
Kyoto University

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October 20～24, 2014

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The papers presented in this volume of RIMS Kôkyûroku Bessatsu are in final form and refereed.

Preface

This volume presents a collection of research and survey articles which were contributed by invited speakers in the RIMS workshop " Several aspects of microlocal analysis " held at Research Institute for Mathematical Sciences (RIMS), Kyoto University from 20 through 24 October, 2014, in which experts from many areas of mathematics participated.

Naofumi Honda
Yasunori Okada
Susumu Yamazaki

Program

RIMS Workshop on

Several aspects of microlocal analysis

Organizers: Naofumi Honda (Hokkaido Univ.),
Yasunori Okada (Chiba Univ.) and Susumu Yamazaki (Nihon Univ.)

October 20 (Mon.)–24 (Fri.), 2014, Room No. 111 of RIMS, Kyoto University

October 20, Monday

10:00 - 10:50 Shinya Moritoh (Nara Women's Univ.)
Detection of singularities in wavelet and ridgelet analyses

11:10 - 12:00 Hideshi Yamane (Kwansei Gakuin Univ.)
Asymptotics for the defocusing integrable discrete nonlinear Schrödinger equation

13:40 - 14:30 Akira Shudo (Tokyo Metropolitan Univ.)
Quantum tunneling in nonintegrable systems: beyond the leading order WKB description

14:50 - 15:40 Sampei Hirose (Shibaura Institute of Technology)
On unfoldings of differential operators

16:00 - 16:50 Takashi Aoki (Kindai Univ.)
The hypergeometric function and WKB solutions

October 21, Tuesday

10:00 - 10:50 Yasunori Okada (Chiba Univ.)
Solvability of coupling equations and infinite dimensional holomorphy

11:10 - 12:00 Toshinori Oaku (Tokyo Woman's Christian Univ.)
Annihilators of Laurent coefficients of the complex power of a real analytic function – example and algorithm

13:40 - 14:30 Kunio Yoshino (Tokyo City Univ.)
Spectral analysis of Toeplitz operators on Bargmann - Fock space via hyperfunctions

14:50 - 15:40 Kohei Umeta (Hokkaido Univ.) and Naofumi Honda (Hokkaido Univ.)
On the construction of Laplace transforms for Laplace hyperfunctions

16:00 - 16:50 Hidetoshi Tahara (Sophia Univ.)
q-Analogues of Laplace and Borel transforms by using q-exponentials

October 22, Wednesday

10:00 - 10:50 Luca Prelli (Univ. Lisbon), Naofumi Honda (Hokkaido Univ.) and Susumu Yamazaki (Nihon Univ.)
Multi-microlocalization

11:10 - 12:00 Keisuke Uchikoshi (National Defense Academy of Japan)
Singularities in a compressible perfect fluid

13:40 - 14:30 Yoko Umeta (Tokyo Univ. of Science) and Shinichi Tajima (Tsukuba Univ.)
On the monodromy structure of holonomic D-modules associated with simple line singularities

14:50 - 15:40 Joe Kamimoto (Kyushu Univ.)
On local zeta functions in two dimensions

16:00 - 16:50 Kiyoomi Kataoka (Univ. Tokyo)
A review of the results on second analytic singularities in diffraction problems, and some geometric proofs

October 23, Thursday

10:00 - 10:50 Susumu Yamazaki (Nihon Univ.)
Boundary value problem for hyperfunction solutions to Fuchsian systems

11:10 - 12:00 Takashi Takiguchi (National Defense Academy of Japan)
On uniqueness problems for the Radon transform

13:40 - 14:30 Naofumi Honda (Hokkaido Univ.) and Takahiro Kawai (RIMS)
A study of pinch points and cups in the Landau-Nakanishi geometry

14:50 - 15:40 Tatsuya Koike (Kobe Univ.)
On Voros coefficients and middle convolutions for linear ordinary differential equations with a large parameter

16:00 - 16:50 David Sauzin (French National Center for Scientific Research)
Nonlinear analysis with resurgent functions, I

October 24, Friday

10:00 - 10:50 David Sauzin (French National Center for Scientific Research)
Nonlinear analysis with resurgent functions, II

11:10 - 12:00 Shingo Kamimoto (RIMS), Takahiro Kawai (RIMS) and Tatsuya Koike (Kobe Univ.)
Exact WKB analysis of simple pole type operators — alien calculus using the differential operators of infinite order

13:40 - 14:30 Hidekazu Ito (Kanazawa Univ.)
Some aspects of integrability of vector fields and normal form theory

14:50 - 15:40 Kohei Iwaki (RIMS)
Exact WKB analysis and cluster algebras

16:00 - 16:50 Masafumi Yoshino (Hiroshima Univ.)
Monodromy of confluent hypergeometric system

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