

Lecture Notes in Mathematics

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H. Fujita T. Ikebe S.T. Kuroda (Eds.)

Functional-Analytic Methods for Partial Differential Equations

Proceedings of a Conference and a Symposium
held in Tokyo, Japan, July 3–9, 1989



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Preface

In commemoration of his retirement from the University of California, Berkeley, an "International Conference on Functional Analysis and its Application in Honor of Professor Tosio Kato" was held on July 3 through 6, 1989, at Sanjo Conference Hall, University of Tokyo, the university where he began his academic career. The Organizing Committee, which consisted of Hiroshi Fujita (Meiji Univ.), S. T. Kuroda (Gakushuin Univ.), and Teruo Ikebe (Kyoto Univ., chairman), selected invited speakers mostly from among his students, students' students, and some recent collaborators. The Conference was followed by a "Symposium on Spectral and Scattering Theory" held on July 7 through 9 at Gakushuin Centennial Memorial Hall, Gakushuin University, Tokyo.

The Conference received financial supports from the Inoue Foundation for Science and the Japan Association for Mathematical Sciences, and the Symposium from Gakushuin University. We express our gratitude to these organizations.

Speakers and participants of these Conference and Symposium wish to heartily dedicate this volume to Professor Kato in celebration of his seventieth birthday.

H. Fujita
T. Ikebe
S. T. Kuroda

Programmes¹

INTERNATIONAL CONFERENCE ON FUNCTIONAL ANALYSIS AND ITS APPLICATION IN HONOR OF PROFESSOR TOSIO KATO

MONDAY, JULY 3, 1989

James S. Howland (Univ. of Virginia)

Quantum Stability

Peter Hess (Univ. of Zürich)

Singular Perturbations in Periodic-Parabolic Problems

Kenji Yajima (Univ. of Tokyo)

Smoothing Property of Schrödinger Propagators

Frank J. Massey III (Univ. of Michigan-Dearborn)

Greg Bachelis (Wayne State Univ.)

An Optimal Coin Tossing Problem of R. Rivest

TUESDAY, JULY 4

Takao Tayoshi (Univ. of Electro-Communications)

Nonexistence of L^2 -Eigenvalues of the Schrödinger Operator

Tosio Kato (Univ. of California, Berkeley)

Liapunov Functions and Monotonicity for the Navier-Stokes Equation

Hiroshi Matano (Univ. of Tokyo)

Behavior of Solutions to Elliptic Problems from the Point of View of Dynamical Systems

H. Bruce Stewart (Brookhaven National Lab.)

Chaos, Bifurcation, and Catastrophe

After the talk a computer-generated movie "The Lorenz System" completed by

H. B. Stewart in 1984 was shown.

Conference Banquet in honor of Professor Kato

WEDNESDAY, JULY 5

Takashi Suzuki (Tokyo Metropolitan Univ.)

Spectral Theory and Nonlinear Elliptic Equations

Rafael J. Íorio, Jr. (Inst. de Mat. Pura e Aplicada)

KdV and BO in Weighted Sobolev Spaces

Alan McIntosh (Macquarie Univ.)

The Square Root Problem for Elliptic Operators

Gustavo Ponce (Pennsylvania State Univ.)

The Cauchy Problem for the Generalized Korteweg-de Vries Equations

Akira Iwatsuka (Kyoto Univ.)

On Schrödinger Operators with Magnetic Fields

¹The titles of the papers contained in the present volume are not necessarily the same as those of talks.

THURSDAY, JULY 6

Hideo Tamura (Ibaraki Univ.)

Existence of Bound States for Double Well Potentials and the Efimov Effect

Arne Jensen (Aalborg Univ.)

Commutators and Schrödinger Operators

Charles S. Lin (Univ. of Illinois at Chicago)

On Symmetry Groups of Some Differential Equations

Takashi Ichinose (Kanazawa Univ.)

Feynman Path Integral for the Dirac Equation

SYMPOSIUM ON SPECTRAL AND SCATTERING THEORY

FRIDAY, JULY 7, 1989

Mitsuru Ikawa (Osaka Univ.)

On Poles of Scattering Matrices

Peter Hess (Univ. of Zürich)

The Periodic-Parabolic Eigenvalue Problem, with Applications

Rafael J. Íorio, Jr. (Inst. de Mat. Pura e Aplicada)

Adiabatic Switching for Time Dependent Electric Fields

Short Talks

Gustavo Ponce (Pennsylvania State Univ.)

Nonlinear Small Data Scattering for Generalized KdV Equation

Tohru Ozawa (Nagoya Univ.)

Smoothing Effect for the Schrödinger Evolution Equations with Electric Fields

SATURDAY, JULY 8

Shinichi Kotani (Univ. of Tokyo)

On Some Topics of Schrödinger Operators with Random Potentials

Tosio Kato (Univ. of California, Berkeley)

Positive Commutators $i[f(P), g(Q)]$

James S. Howland (Univ. of Virginia)

Adiabatic Theorem for Dense Point Spectra

Arne Jensen (Aalborg Univ.)

High Energy Asymptotics for the Total Scattering Phase in Potential Scattering

SUNDAY, JULY 9

Yoshio Tsutsumi (Hiroshima Univ.)

L^2 Solutions for the Initial Boundary Value Problem of the Korteweg-de Vries

Equation with Periodic Boundary Condition

Alan McIntosh (Macquarie Univ.)

Operator Theory for Quadratic Estimates

Contents

J. S. Howland, Spectral Concentration for Dense Point Spectrum	1
E. N. Dancer and P. Hess, Behaviour of a Semilinear Periodic-Parabolic Problem when a Parameter is Small	12
K. Yajima, On Smoothing Property of Schrödinger Propagators	20
G. F. Bachelis and F. J. Massey III, A Coin Tossing Problem of R. L. Rivest	36
T. Kato, Liapunov Functions and Monotonicity in the Navier-Stokes Equation	53
H. Matano, Singular Solutions of a Nonlinear Elliptic Equation and an Infinite Dimensional Dynamical System	64
T. Suzuki, Introduction to Geometric Potential Theory	88
R. J. Iório, Jr., KdV, BO and Friends in Weighted Sobolev Spaces	104
A. McIntosh, The Square Root Problem for Elliptic Operators, a Survey	122
C. E. Kenig, G. Ponce, and L. Vega, The Initial Value Problem for a Class of Nonlinear Dispersive Equations	141
A. Iwatsuka, On Schrödinger Operators with Magnetic Fields	157
H. Tamura, Existence of Bound States for Double Well Potentials and the Efimov Effect	173
A. Jensen, High Energy Asymptotics for the Total Scattering Phase in Potential Scattering Theory	187
T. Ichinose, Feynman Path Integral to Relativistic Quantum Mechanics	196
M. Ikawa, On the Distribution of Poles of the Scattering Matrix for Several Convex Bodies	210
T. Ozawa, Smoothing Effect for the Schrödinger Evolution Equations with Electric Fields	226
T. Ogawa and Y. Tsutsumi, Blow-up of Solutions for the Nonlinear Schrödinger Equation with Quartic Potential and Periodic Boundary Condition	236
List of Recent Publications of Tosio Kato	252

Papers are arranged according to the order of talks.