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Nonlinear Partial Differential Equations, Dynamical Systems and Their Applications

京都大学数理解析研究所

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数理解析研究所講究録は，京都大学数理解析研究所の共同利用研究集会および共同研究の記録として1964年に刊行が開始されました．現在の共同利用・共同研究拠点（2010年発足）の前身である，全国共同利用研究所として当研究所が発足した翌年のことでしたが，以来半世紀，毎年数十巻を刊行し，2012年には第1800巻が刊行されるに至りました．第1巻から第1840巻までに収録された論文数は26,808編，総頁数は317,199頁という膨大なものであり，最先端の数学・数理科学分野の研究状況を伝えるのみならず，我が国の数学・数理科学の発展の歴史を留める文献として，他に類例を見ない論文集となっています．

講究録の内容は当研究所のウェブサイトおよび京都大学の学術情報リポジトリにおいても公開され，年間の総アクセス数は 1,254,383回（2012年度）を数えるなど，多数の方にご利用いただいています．

講究録の使用言語は論文著者の判断に任されていますが，結果的に日本語が多用されていることが特徴の一つとなっています．その結果，講究録は，数学・数理科学の広い領域における最先端の専門知識に母国語でアクセスできるものとして，近年の英語化の流れの中で，重要な文献となりつつあります．

当研究所の共同利用事業に参加し講究録の論文を執筆していただいた多数の方々に対し，講究録を大きく成長させていただいたことを深く感謝いたしますとともに，これからも，当研究所の共同利用・共同研究拠点としての活動にご参加いただき，講究録の発展にご協力いただけますよう心よりお願い申し上げます．

RIMS Kôkyûroku 1881

Nonlinear Partial Differential Equations, Dynamical Systems and Their Applications

September 3～6, 2012

edited by Masaharu Taniguchi

April, 2014

Research Institute for Mathematical Sciences

Kyoto University, Kyoto, Japan

This is a report of research done at the Research Institute for Mathematical Sciences, Kyoto University. The papers contained herein are in final form and will not be submitted for publication elsewhere.

俣野博先生還暦記念祝賀会　2012.9.5　京都大学百周年時計台記念館
in celebration of Professor Hiroshi Matano's 60th birthday

Preface

This conference was held on September 3 - 6, 2012 at Research Institute for Mathematical Sciences, Kyoto University in honor of Professor Hiroshi Matano of The University of Tokyo on the occasion of his 60th birthday.

Scientific committee members and organizing committee members are as follows.

Scientific Committee

Henri Berestycki (EHESS, Paris)
Bernold Fiedler (Free University Berlin)
David Kinderlehrer (Carnegie Mellon University)
Yasumasa Nishiura (Tohoku University)
Paul Rabinowitz (University of Wisconsin-Madison)
Eiji Yanagida (Tokyo Institute of Technology)

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Kazuhiro Takimoto (Hiroshima University)
Masaharu Taniguchi (Okayama University)
Takeo Ushijima (Tokyo University of Science)
Hiroki Yagisita (Kyoto Sangyo University)
Shigetoshi Yazaki (Meiji University)

We had 21 speakers and 117 participants. Many young graduate students helped this conference. We would like to thank all of them and hope that this proceedings will be helpful for future studies. (M. Taniguchi, K.-I. Nakamura)

Nonlinear Partial Differential Equations, Dynamical Systems and Their Applications

–in honor of Professor Hiroshi Matano on the occasion of his 60th birthday–

Date: September 3(Mon) - 6(Thu), 2012
Place: Room 420, Research Institute for Mathematical Sciences, Kyoto University, JAPAN

September 3 (Mon)

9:50 – 10:00 Opening

10:00 – 10:50 Paul Rabinowitz (Univ. Wisconsin-Madison / POSTECH)
On an Allen-Cahn model of phase transitions

11:00 – 11:50 Shuichi Jimbo (Hokkaido University)
Domain variation and electromagnetic frequencies

Lunch

14:00 – 14:50 Hisashi Okamoto (Kyoto University)
Pattern formation of the Kolmogorv flows at high Reynolds numbers

15:00 – 15:50 Frank Merle (University of Cergy-Pontoise, IHES)
Global solution for three dimension critical wave equation

16:10 – 17:00 Yoshihisa Morita (Ryukoku University)
Reaction-diffusion systems with conservation of mass

September 4 (Tue)

10:40 – 11:10 Toshiko Ogiwara (Josai University)
Convergence results in order-preserving dynamical systems and applications to a molecular motor system

11:20 – 12:10 Jong-Shenq Guo (Tamkang University)
On a free boundary problem for a two-species weak competition system

Lunch

14:00 – 14:50 Shin-Ichiro Ei (Kyushu University)
Dynamics of localized solutions for reaction-diffusion systems on two-dimensional domain

15:00 – 15:50 Xing Liang (Univ of Science and Technology of China)
The spreading speeds for the integral operator without compactness

16:10 – 17:00 Jaeyoung Byeon (POSTECH)
Variational construction of solutions with clustering multi-bumps for nonlinear elliptic problems

September 5 (Wed)

9:30 – 10:20 Hiroshi Kokubu (Kyoto University)
Topological computation method for global dynamics and its application

10:40 – 11:10 Toshiyuki Ogawa (Meiji University)
Triple degeneracy in 3-component reaction-diffusion system

11:20 – 12:10 David Kinderlehrer (Carnegie Mellon University)
The role of entropy in the evolution of microstructural networks

Lunch

14:00 – 14:50 Peter Polacik (University of Minnesota)
Symmetry and the nodal structure of nonnegative solutions of elliptic equations

15:00 – 15:50 Marek Fila (Comenius University)
Rate of convergence to Barenblatt profiles for the fast diffusion equation

16:10 – 17:00 Tadahisa Funaki (The University of Tokyo)
Stationary measures of the KPZ equation for growing interfaces with fluctuations

September 6 (Thu)

9:30 – 10:20 Yihong Du (University of New England)
Regularity and long-time behavior of the free boundary in nonlinear Stefan problems

10:30 – 11:20 Hirokazu Ninomiya (Meiji University)
Diffusion-induced bifurcations from the stationary solutions and infinity

11:30 – 12:20 Bendong Lou (Tongji University)
A convergence result for a problem with free boundary conditions and its applications

Lunch

14:00 – 14:50 Bernold Fiedler (Free University Berlin)
Reaction, advection, and diffusion on the circle

15:00 – 15:50 Henri Berestycki (EHESS - Paris)
Propagation driven by a line in reaction-diffusion equations

15:50 Closing

See http://nlpde.w3.kanazawa-u.ac.jp/rims2012/ for the detailed information.

This conference is partially supported by

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Nonlinear Partial Differential Equations, Dynamical Systems and Their Applications
非線形偏微分方程式，力学系およびその応用
RIMS 研究集会報告集

２０１２年９月３日～９月６日
研究代表者　谷口　雅治 (Masaharu Taniguchi)
副代表者　中村　健一 (Ken-Ichi Nakamura)

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講究録

Kôkyûroku

RIMS Kôkyûroku was started in 1964 as the proceedings of symposia, colloquia and workshops supported by RIMS, the Research Institute for Mathematical Sciences, Kyoto University. It was the next year of the establishment of RIMS as one of the nationwide Cooperative Research Centers, the preceding system of the current Joint Usage/Research Centers that started in 2010. For half a century since then, about 50 to 60 volumes have been issued each year, and the 1,800th volume was issued in 2012. The volumes of Kôkyûroku from the 1st through the 1,840th, containing enormous 26,808 articles and 317,199 pages, not only deliver the latest research activities in mathematics and mathematical sciences but also constitute valuable and incomparable collections of articles that pass down history of progress of mathematics and mathematical science in Japan.

Articles in Kôkyûroku are available on the websites of RIMS and Kyoto University Research Information Repository. They are very frequently accessed on the internet, with a total of as many as 1,254,383 accesses in 2012.

The authors choose the languages to write articles, and many are written in Japanese, which is one of the characteristics of Kôkyûroku. As a result, Kôkyûroku is regarded as a significant and important literature which allows easy access to the latest specialized knowledge in the large fields of mathematics and mathematical sciences written in native language for Japanese readers, while more and more research papers are being written in English in recent years.

We are deeply grateful to many of those who have participated in cooperative research activities of RIMS and greatly developed Kôkyûroku. We heartily ask for your continuous participation in research activities at RIMS as a Joint Usage Research Center and your warm support and cooperation for the fruitful development of Kôkyûroku.