

数理解析研究所講究録 1330

反応拡散方程式系に現れる動的パターンの解析とその周辺

Conference

on

Dynamics of Patterns in Reaction-Diffusion Systems
and the Related Topics

京都大学数理解析研究所

2003年7月

Preface

Reaction-diffusion systems well describe large diversity of complex spatio-temporal patterns occurring in reacting and diffusing media such as spiral or target patterns of chemical waves, propagating pulses in nerve system and spiky patterns in morphogenesis and so on, which have been discussed from theoretical and complementarily numerical points of view. Specially, the structure of stationary solutions including traveling waves have been extensively investigated together with the stability and the bifurcation structure. And quite recently, detail informations on the properties of solutions not only in such static states but also in dynamic states have been revealed. By using the informations, we can understand much more complex dynamics of solutions theoretically such as collision of pulses and interaction of interfaces.

In the conference, recent theoretical approaches to deal with various dynamical motion in reaction-diffusion systems and the related topics were discussed.

This proceeding contains a collection of the papers related to the thema of the conference. The individual authors of this book were participants of the conference.

We hope that the results reported in the conference will contribute to future researches on the subject.

Finally, we would like to thank all of the contributors in this conference. Also we thank Grand-in-Aid for Scientific Researches, A(1) 12304006, C(2) 12640217, C(2) 13640107.

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Conference on Dynamics of Patterns in Reaction-Diffusion Systems and the Related Topics

Organizers: Shin-Ichiro EI, Hideo IKEDA and Masayasu MIMURA
November 25th (Monday) - November 28th (Thursday), 2002
Room 420, RIMS, Kyoto University, Kyoto, Japan

Program

25th Nov. (Mon.)

- 13:20 - 13:30 Opening address Shin-Ichiro Ei (Yokohama City University)
13:30 - 14:10 Yasumasa Nishiura (Hokkaido University)
Strong interactions among particle-like solutions in dissipative systems
14:20 - 15:00 Michiel Bertsch (CNR and University of Rome II)
Director fields and their evolution
15:20 - 16:00 Yoshihisa Morita (Ryukoku University)
Stable solutions to the Ginzburg-Landau equation in a thin domain
16:10 - 16:50 Rustum Choksi (Simon Fraser University)
Mathematical Aspects of Microphase Separation of Diblock Copolymers

26th Nov. (Tue.)

- 10:00 - 10:40 Ken-Ichi Nakamura (University of Electro-communications)
Bounds for effective speeds of traveling fronts in spatially periodic media
11:00 - 11:40 Francois Hamel (Universite Aix-Marseille III)
Conical-shaped travelling fronts and a free boundary problem
arising in combustion theory
11:40 - 13:30 Lunch break
13:30 - 14:10 Tasso J. Kaper (Boston University)
Pulse dynamics: self-replication and finite time blowup
14:20 - 15:00 Tsutomu Ikeda (Ryukoku University)
Bifurcation of helical wave from traveling wave
15:20 - 16:00 Jong-Shenq Guo (National Taiwan Normal University)
Traveling waves for discrete quasilinear monostable dynamics
16:10 - 16:50 Izumi Takagi (Tohoku University)
Patterns generated by an activator-inhibitor system in a very thin domain

27th Nov. (Wed.)

- 10:00 - 10:40 Dongho Chae (Seoul National University)
On the incompressible Euler system and its perturbations
- 11:00 - 11:40 Tonia Ricciardi (Federico II University of Naples)
A nonlinear elliptic system from Maxwell-Chern-Simons vortex theory
- 11:40 - 13:30 Lunch break
- 13:30 - 14:10 Eiji Yanagida (Tohoku University)
Behavior of solutions for a supercritical semilinear heat equation
- 14:20 - 15:00 Takao Ohta (Hiroshima University)
Oscillations of Phase-Separated Domains in Reactive Mixtures
- 15:20 - 16:00 Cyrill Muratov (New Jersey Institute of Technology)
Free boundary problem and its applications to reaction-diffusion systems of activator-inhibitor type
- 16:10 - 16:50 Tohru Tsujikawa (Miyazaki University)
Singular limit analysis of aggregating patterns in chemotaxis-growth model

28th Nov. (Thu.)

- 10:00 - 10:40 Roberta Dal Passo (Universita' di Roma " Tor Vergata ")
Operators of Thin-Film type: qualitative properties and open problems
- 11:00 - 11:40 Kunimochi Sakamoto (Hiroshima University)
An approximation of reaction-diffusion systems by interface equations coupled with a parabolic or elliptic equation
- 11:40 Closing address

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研究集会報告集

2002年11月25日～11月28日

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目 次

1. Remarks on the Perturbed Euler equations -----	1
Seoul National Univ. Dongho Chae	
2. Mathematical Aspects of Microphase Separation of Diblock Copolymers -----	10
Simon Fraser Univ. Rustum Choksi	
3. TRAVELING WAVES FOR DISCRETE QUASILINEAR MONOSTABLE DYNAMICS -----	18
National Taiwan Normal Univ. Jong-Shenq Guo	
4. Conical-shaped travelling fronts in some reaction-diffusion equations -----	25
Univ. Aix-Marseille III Francois Hamel	
5. Bifurcation of helical wave from traveling wave -----	40
龍谷大・理工 池田 勉(Tsutomu Ikeda)	
京大・数理研 長山 雅晴(Masaharu Nagayama)	
富山大・理 池田 榮雄 (Hideo Ikeda)	
6. Stable Solutions to the Ginzburg-Landau Equation in a Thin Domain -----	56
龍谷大・理工 森田 善久(Yoshihisa Morita)	
7. Free boundary problem and its applications to reaction-diffusion systems of activator-inhibitor type -----	63
New Jersey Inst. of Tech. Cyrill B. Muratov	
8. Bounds for effective speeds of traveling fronts in spatially periodic media -----	79
電通大 中村 健一(Ken-Ichi Nakamura)	
9. Strong Interactions among Particlelike Solutions in Dissipative Systems -----	88
北大・電子科学研 西浦 廉政(Yasumasa Nishiura)	

1 0.	Traveling waves in phase-separating reactive mixtures -----	101
	広島大・理学	奥菌 透(Tohru Okuzono)
	//	太田 隆夫(Takao Ohta)
1 1.	Some nonlinear elliptic problems from Maxwell-Chern-Simons vortex theory -----	124
	Univ. di Napoli Federico II	Tonia Ricciardi
1 2.	Approximations of reaction-diffusion equations by interface equations	
	— boundary-interior layer — -----	134
	広島大・理学	坂元 国望(Kunimochi Sakamoto)
1 3.	Singular limit analysis of aggregating patterns in a Chemotaxis-Growth model -----	149
	宮崎大・工	辻川 亨(Tohru Tsujikawa)
	広島大・理学	三村 昌泰 (Masayasu Mimura)
1 4.	Behavior of solutions for a supercritical semilinear heat equation -----	161
	東北大・理学	柳田 英二(Eiji Yanagida)