数理解析研究所講究録1191

# 非線形散逸系の界面・パルス・波動

京都大学数理解析研究所

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# *Interfaces, Pulses and Waves in Nonlinear Dissipative Systems*

*February, 2001*

*Research Institute for Mathematical Sciences*

*Kyoto University, Kyoto, Japan*

# Preface

This volume contains a collection of 17 papers presented at the International symposium on Interface, Pulses and Waves in Nonlinear Dissipative Systems. The symposium was held at Research Institute for Mathematical Sciences (RIMS) at Kyoto University, Kyoto, Japan from 28 to 31 August 2000. This was one of the series of symposium organized as RIMS Project 2000 on "Reaction-diffusion systems: theory and applications". More than 50 participants attended the symposium where they exchanged their vivid information in this area as well as sharing the ideas on a variety of topics discussed in this volume.

Although this symposium is basically in the field of Applied Mathematics, what we intended is to provide an opportunity to discuss recent advances not only in reaction-diffusion systems but also in the related topics studied by experimentalists and theoretical physicists. We believe that such a wider perspective will strengthen and develop Applied Mathematics further in the long run. The symposium was indeed very successful in deepening our understanding of Nonlinear Dissipative Systems.

We would like to thank all the speakers for their presentations of the highest quality and Professor M. Mimura, Professor H. Okamoto and Dr. M. Nagayama for their helpful advice and laborious efforts during and after the symposium.

January, 2001

Takao Ohta
Yasumasa Nishiura
Tsutomu Ikeda

RIMS Project 2000 "Reaction-diffusion systems: theory and applications"

# Interfaces, Pulses and Waves in Nonlinear Dissipative Systems

28-31 August 2000

**28 August**

13:45 M. Mimura (Hiroshima)
Opening address

14:00-14:45 H. G. Purwins (Munster)
Quasiparticles in Reaction-Diffusion-Systems:
Experiment versus Theory

14:45-15:30 S. Nasuno (KIT)
Interacting spots in a quasi two-dimensional dc-driven
gas discharge system

15:30-16:00 break

16:00-16:45 Y. Hidaka (Kyushu)
Chevron-Wavy Pattern in Liquid Crystals

**29 August**

9:30-10:15 M. Chaplain (Dundee)
Reaction-diffusion equations on spherical surfaces:
Numerical simulation and application to tumour growth
modelling

10:15-10:30 break

10:30-11:15 M. Sano (Tokyo)
Calcium Wave Propagation in Networks
of Astrocyte-Neuron Culture

11:15-12:00 A. Mochizuki (Kyushu)
Mathematical models for biological pattern formation:
on cone mosaic of retina and strips of coating in fish.

13:30-14:15 F. Hamel (Universite Pierre et Marie Curie)
Front propagation in periodic media

14:15-15:00 T. Ikeda (Ryukoku) and M. Nagayama (Kyoto)
Numerical simulation of helical waves arising in self-
propagating high-temperature syntheses

15:00-15:30 break

15:30-16:15 Y. Yamazaki (Hiroshima)
Front Aggregation and Labyrinthine Pattern in the Drying Process of Water-Granule Systems

16:15-17:00 A. Nomura (Yamaguchi Pref.)
Chemotactic patterns in biological systems

**30 August**

9:30-10:15 E. Meron (Ben-Gurion)
Spiral-Wave Nucleation

10:15-10:30 break

10:30-11:15 M. Mimura (Hiroshima) and S.-I. Ei (Yokohama City Univ.)
Dynamics of travelling spots in reaction-diffusion systems

11:15-12:00 D. Ueyama (Hiroshima), Y. Nishiura (Hokkaido) and T. Yanagita (Hokkaido) A chaotic traveling pulse in discrete dissipative systems

13:30-14:15 M. Doi (NIT)
Pattern Formation on the Free Surface of Bilayer Films

14:15-15:00 M. Kawaguchi (Mie)
Hele-Shaw cell experiments of viscous fingering and bubble motion in polymer solutions

15:00-15:30 break

15:30-16:15 S. Tadaki (Saga)
Can we explain the formation of congestion in expressways? (tentative)

16:15-17:00 K. Nakanishi (Nagoya)
Traffic Models and a Solvable Difference-Differential Equation

**31 August**

9:30-10:15 R. Kapral (Tronto)
Line Defects and Nonequilibrium Chemical Patterns

10:15-10:30 break

10:30-11:15 D. Takahashi (Waseda)
Continuous, Discrete, Ultradiscrete waves

11:15-12:00 T. Okuzono (Hiroshima) and T. Ohta (Hiroshima)
Self-propulsion of Cellular Structures in Chemically Reacting Mixtures

非線形散逸系の界面・パルス・波動

Interfaces, Pulses and Waves in Nonlinear Dissipative Systems

研究集会報告集

２０００年８月２８日～８月３１日

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