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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

2001年2月
RIMS Kokyuroku 1191

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

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
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