ReaDiNet 2025

International Conference on Recent Topics in Reaction-Diffusion Systems and Their Applications

Date: Oct. 20 (Mon.) - Oct. 24 (Fri.)

Place: Hokkaido University Conference Hall (Gakujyutsu Koryu Kaikan)

Website: `https://mmc01.es.hokudai.ac.jp/ReaDiNet/`

Aim & Scopes

The IRN ReaDiNet (Reaction-Diffusion Network) is an International Research Group of CNRS composed of French, Japanese, Korean and Taiwanese researchers in the fields of mathematics and its applications. This conference brings together researchers from the community of reaction-diffusion equations and related fields in France, Japan, Korea, and Taiwan to exchange ideas and discuss recent developments in the theory and methods of reaction-diffusion equations, as well as their applications. The primary objectives of this conference are to foster collaborations between researchers from these countries and to create additional opportunities for collaboration among the conference participants.

Organizing Committee

- Thomas Giletti
- Lionel Roques
- Nicolas Champagnat
- Yong-Jung Kim
- Hyung-Ju Hwang
- Chiun-Chuan Chen
- Jenn-Nan Wang
- Hiroshi Matano
- Makiko Sasada
- Masaharu Nagayama

Local Organizers

- Masaharu Nagayama (Hokkaido University)
- Hiroshi Ishii (Hokkaido University)
- Yuki Ueda (Hokkaido University)
- Hiroshi Matano (Meiji University)
- Ken-Ichi Nakamura (Meiji University)
- Makiko Sasada (University of Tokyo)

Invited speakers (alphabet order)

France

- Thomas Giletti (University of Clermont-Auvergne)
- Danielle Hilhorst (CNRS & University Paris-Saclay)
- Apolline Louvet (INRAE)
- Lionel Roques (INRAE)
- Delphine Salort (Sorbonne University)
- Philippe Souplet (University Sorbonne Paris Nord)
- Cécile Taing (University of Poitiers & Inria Paris)

Japan

- Ryosuke Iritani (RIKEN)
- Hiroshi Ishii (Hokkaido Univeristy)
- Hirofumi Izuhara (University of Miyazaki)
- Toru Kan (Osaka Metropolitan University)
- Masataka Kuwamura (Kobe University)
- Hideki Murakawa (Ryukoku University)
- Masahiko Shimojo (Tokyo Metropolitan University)

Korea

- Beomjun Choi (KAIST)
- Hyung Ju Hwang (POSTECH)
- Hyeontae Jo (Korea University)
- Jae Kyoung Kim (KAIST & IBS)
- Yong-Jung Kim (KAIST)
- Seunggyu Lee (Korea University)

Taiwan

- Chueh-Hsin Chang (National Chung Cheng University)
- Chiun-Chuan Chen (National Taiwan University)
- Jia-Yuan Dai (National Tsing Hua University)
- Jong-Shenq Guo (Tamkang University)
- Chun-Hsiung Hsia (National Taiwan University)
- Jenn-Nan Wang (National Taiwan University)
- Chang-Hong Wu (National Yang Ming Chiao Tung University)

Schedule

	20 (Mon.)	21 (Tue.)	22 (Wed.)	23 (Thu.)	24 (Fri.)
9:30–10:20	Opening (10:10∼)	H. Jo	R. Iritani	C. Taing	M. Kuwamura
10:30–11:20	D. Hilhorst	J.-N. Wang	D. Salort	H. Murakawa	T. Giletti
	Lunch Break				
13:30–14:20	J.-S. Guo	C.-C. Chen	J.-Y. Dai	Y.-J. Kim	C.-H. Chang
14:30–15:20	T. Kan	P. Souplet	S. Lee	A. Louvet	L. Roques
	Break		PS	Break	
16:00–16:50	H. J. Hwang	H. Izuhara		M. Shimojo	B. Choi
17:00–17:50	C.-H. Hsia	J. K. Kim		C.-H. Wu	H. Ishii

*PS = Poster Session
*The time is at Japanese Standard Time (UTC+9).

Oct. 20 (Mon.)

10:10 – 10:20 Opening address

10:30 – 11:20 Danielle Hilhorst (CNRS & University Paris-Saclay)
"The vanishing latent heat limit of a stochastic Stefan problem arising in biology"

11:20 – 13:30 Lunch Break

13:30 – 14:20 Jong-Shenq Guo (Tamkang University)
"A new approach towards the bifurcation diagram of a quasilinear differential equation arising in MEMS"

14:30 – 15:20 Toru Kan (Osaka Metropolitan University)
"Traveling fronts and standing pulses in a Flux-limited Keller-Segel model with a growth term"

15:20 – 16:00 Break

16:00 – 16:50 Hyung Ju Hwang (POSTECH)
"The Advent of Physics AI: Digital Twins and Neural Solvers"

17:00 – 17:50 Chun-Hsiung Hsia (National Taiwan University)
"On the Synchronization of ReLU Version of Dense Networks"

Oct. 21 (Tue.)

9:30 – 10:20 Hyeontae Jo (Korea University)
"Learning from imperfect data through simulation-based generative models enables the inference of dynamical systems"

10:30 – 11:20 Jenn-Nan Wang (National Taiwan University)
"Explainable machine learning models for initial boundary value problems of parabolic equations"

11:20 – 13:30 Lunch Break

13:30 – 14:20 Chiun-Chuan Chen (National Taiwan University)
"Traveling wave solutions of a savanna model with grazing and browsing"

14:30 – 15:20 Philippe Souplet (University Sorbonne Paris Nord)
"Threshold, sub-threshold and global unbounded solutions of superlinear heat equations"

15:20 – 16:00 Break

16:00 – 16:50 Hirofumi Izuhara (University of Miyazaki)
"Complicated oscillatory dynamics in two-component Reaction-Diffusion systems"

17:00 – 17:50 Jae Kyoung Kim (KAIST & IBS)
"Advancing Static and Time-Series Data Analysis for Biology and Medicine: Random Matrix Theory"

Oct. 22 (Wed.)

9:30 – 10:20 Ryosuke Iritani (RIKEN)
"Graph-theoretical analysis of evolutionary game in structured populations"

10:30 – 11:20 Delphine Salort (Sorbonne University)
"Asymptotic dynamic of neural models with partial diffusion"

11:20 – 13:30 Lunch Break

13:30 – 14:20 Jia-Yuan Dai (National Tsing Hua University)
"See the invisible Ginzburg–Landau spiral waves: Galerkin control approach"

14:30 – 15:20 Seunggyu Lee (Korea University)
"Shaping decision boundaries: Phase-field approach with efficient but energy-stable numerical scheme"

16:00 – 16:50 Poster Session (Odd number)

17:00 – 17:50 Poster Session (Even number)

18:30 – 20:30 Banquet

Oct. 23 (Thu.)

9:30 – 10:20 Cécile Taing (University of Poitiers & Inria Paris)
"On the Fisher infinitesimal model without variability"

10:30 – 11:20 Hideki Murakawa (Ryukoku University)
"A Relationship Between Adhesion-Mediated and Chemotaxis-Driven Cell Sorting"

11:20 – 13:30 Lunch Break

13:30 – 14:20 Yong-Jung Kim (KAIST)
"Heterogeneous Diffusion in Biological Models"

14:30 – 15:20 Apolline Louvet (INRAE)
"Stochastic modelling of population dynamics in a spatial continuum and application to epidemiology"

15:20 – 16:00 Break

16:00 – 16:50 Masahiko Shimojo (Tokyo Metropolitan University)
"Convergence to forced waves for the Fisher-KPP equation in a shifting environment"

17:00 – 17:50 Chang-Hong Wu (National Yang Ming Chiao Tung University)
"Linear vs. Nonlinear Speed Selection in the two-species Lotka-Volterra Competition Model"

Oct. 24 (Fri.)

9:30 – 10:20 Masataka Kuwamura (Kobe University)
"Single Transition Layer in Mass-Conserving Reaction-Diffusion Systems with Bistable Nonlinearity"

10:30 – 11:20 Thomas Giletti (University of Clermont-Auvergne)
"Linear and nonlinear features of spreading dynamics under shifting heterogeneities"

11:20 – 13:30 Lunch Break

13:30 – 14:20 Chueh-Hsin Chang (National Chung Cheng University)
"Bistable wavefronts of three-species competition-diffusion systems"

14:30 – 15:20 Lionel Roques (INRAE)
"The existence of two thresholds in a bistable equation with nonlocal competition"

15:20 – 16:00 Break

16:00 – 16:50 Beomjun Choi (KAIST)
"Łojasiewicz theorem and asymptotics for nonlinear evolution equations"

17:00 – 17:50 Hiroshi Ishii (Hokkaido University)
"Propagating front solutions in a time-fractional Fisher-KPP equation"

17:50 – 18:00 Closing

List of Poster Presentations

P1 Antoine Diez (RIKEN, Japan)

"Self-organized fingering instabilities drive the emergence of tissue morphogenesis in digit organoids"

P2 Yui Nagayama (Hokkaido University, Japan)

"Bifurcation analysis of a nonlocal advection-diffusion equation with logistic growth"

P3 Riku Watanabe (Hokkaido University, Japan)

"The behavior of spot solutions to a neural field equation on spheroids"

P4 Seunghoon Jeong (POSTECH, Korea)

"Asymptotic convergence of nonconvex Wasserstein gradient flows"

P5 Yueyuan Gao (Shimane University, Japan)

"Neuronal nonlinearities and memory effect in RF Power Amplifiers: A Bayesian Approach to Hodgkin-Huxley Differential Equations"

P6 Takahiro Arai (Japan Agency for Marine-Earth Science and Technology, Japan)

"Phase reduction theory for traveling and oscillating solutions in reaction – diffusion systems"

P7 Yuma Noda (Hokkaido University, Japan)

"Data analysis using a mathematical model of body circulation describing Glucose, Insulin kinetics"

P8 Simpei Makida (Hokkaido University, Japan)

"On the Gromov–Hausdorff stability of metric viscosity solutions"

P9 Shinya Uchiumi (Hokkaido University, Japan)

"On multiple stationary solutions of lid-driven cavity problems in triangular domains"

P10 Loth Damagui Chabi (Université Sorbonne Paris Nord, France)

"Blow-up behavior for reaction-diffusion equations with non scale invariant nonlinearity"

P11 Youhi Morii (Tohoku University, Japan)

"Discovering Low Zel'dovich Number Behavior in Extreme Combustion"

P12 Minji Kang (POSTECH, Korea)

"Noise-Robust Absence of Stochastic Turing Patterns in a Class of Chemical Reaction Networks"

P13 Rikuya Kakinuma (Tohoku University, Japan)

"The existence of L^2 normalized solutions to scalar field equations with absorption"

P14 Yuina Sato (Tohoku University, Japan)

"Asymptotic behavior of viscosity solutions to parabolic normalized p-Laplace equations"

P15 Kharisma Surya Putri (Kanazawa University, Japan)

"Robust Schemes and Analysis for Bulk-Surface Cross-Diffusion-Chemotaxis Systems"

P16 Aesol Jeon (National Institute for Mathematical Sciences, Korea)

"Diffusion-Reaction Epidemic Model with a Free Boundary"

P17 Mizuki Kojima (Kanagawa University, Japan)

"On self-similar solutions of time-fractional semilinear heat equations"

P18 Hirotaka Ito (Tokyo Metropolitan University, Japan)

"Toward Analysis of Asymptotic Behavior of Blow-up Solution for Complex-valued Fujita-type Equation with Quadratic Nonlinear Term"

P19 Tsubasa Sukekawa (Kyoto University, Japan)

"Imaging data-based model description using optimal transport theory and phase-field method"

P20 Ryo Ito (Kanagawa University, Japan)

"Existence of bounded and unbounded traveling wave solutions in reaction-diffusion equations"

P21 Shugo Uokawa (Hokkaido University, Japan)

"Mathematical Modeling of Pattern Formation in Bacterial Colonies"