
Contact Information

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Employment

9/08 – Scientific staff member, CWI Amsterdam.

9/06 – 8/08 Scientific staff member (tenure track), National Research Institute for Mathematics and Computer Science (CWI) Amsterdam, Department for Modelling, Analysis and Simulation (MAS).

9/05 – 8/06 Research fellow (BAT IIa), Weierstraß Institute, Berlin.

9/04 – 8/05 PIMS postdoctoral fellow, University of British Columbia and Simon Fraser University

1/03 – 5/04 Teaching Assistant, School of Mathematics, University of Minnesota

9/02 – 12/02 Research Assistant (NSF Grant DMS-0203301), School of Math., University of Minnesota

8/01 – 5/02 Teaching Assistant, School of Mathematics, University of Minnesota

1/01 – 7/01 Editor, section 37 (Dynamical Systems) Zentralblatt für Mathematik

3/01 Industry research project, Bayer AG

8/00 – 7/01 Research Fellow (BAT IIa), Mathematical Institute I, Free University of Berlin

9/97 – 3/00 Teaching Assistant, Mathematical Institute I, Free University of Berlin

1/97 – 6/97 Grader, Department of Mathematics, University of California at Santa Cruz

Education

5/04 PhD graduation, University of Minnesota, School of Mathematics, thesis title “Homoclinic bifurcations from heteroclinic cycles with periodic orbits and tracefiring of pulses”, adviser Arnd Scheel

8/01 – 5/04 Graduate and Doctoral studies, School of Mathematics, University of Minnesota

6/00 – 7/01 Graduate studies, Mathematical Institute I, Free University Berlin

10/97 – 5/00 Diploma Mathematician, Free University of Berlin, thesis “Dynamics of Waves in Weakly Coupled Oscillator Arrays”, grade A (1.0), adviser Bernold Fiedler

9/96 – 9/97 Studies in Mathematics, Philosophy and Computer Science, University of California at Santa Cruz

3/95 – 8/96 Undergraduate studies in Mathematics and Philosophy, University of Göttingen

10/94 – 2/95 Undergraduate studies in Mathematics, University of Bremen

Awards and Fellowships

9/04 – 8/05 Postdoctoral Fellowship, Pacific Institute for the Mathematical Sciences, Canada

5/01 Research Fellow, Max-Planck-Institute for Mathematics in the Sciences, Leipzig

9/00 Outstanding Diploma Thesis Prize, German Mathematical Society

9/96 – 8/97 Education abroad fellowship of the University of California

Grants and Invited Visits

11/05 Visiting Researcher, Isaac Newton Institute for Mathematical Sciences, Cambridge

1/05 – 2/05 Visiting Researcher, Weierstraß Institute for Applied Analysis and Stochastics, Berlin

6/04 – 7/04 Visiting Researcher, Free University of Berlin, Mathematical Institute I

12/03 – 1/04 Visiting Researcher, Technical University of Berlin (SFB 555)

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- 6/02 – 8/03 Summer and Travel support (NSF Grant DMS-0203301), School of Mathematics, University of Minnesota
- 7/01 Scientific visit (Nizhny-Novgorod, Russia), European Science Foundation

Selected Invited Presentations

- 5/19/09 First– versus Second–order Semi–strong Interaction of Pulses. SIAM Conference on Applied Dynamics Systems, Snowbird, USA.
- 12/16/08 Fronts in FPU chains. Workshop Dynamics of Patterns, Oberwolfach Research Institute, Germany.
- 7/23/08 An Overview of Self-replicating Pulses. SIAM Conference on Nonlinear Waves and Coherent Structures, Rome, Italy. (co-organised minisymposium).
- 7/22/08 Viscous Shocks in the Destabilized Kuramoto-Sivashinsky Equation. SIAM Conference on Nonlinear Waves and Coherent Structures, Rome, Italy.
- 7/17/07 Dispersive and Nonclassical shocks in the hyperbolic continuum limit of FPU chains. Minisymposium talk at ICIAM Conference, Zürich, Switzerland
- 4/27/07 Typical instabilities and bifurcations of wave trains in reaction diffusion systems. Dynamics of patterns day, University of Twente
- 10/11/06 Wave trains, solitons and modulation theory in FPU Chains. Conference on Multiscale Problems, Munich, Germany
- 9/10/06 The saddle-node of nearly homogeneous wave trains in reaction-diffusion systems. Minisymposium talk SIAM Conference on Nonlinear Waves and Coherent Structures, Seattle.
- 7/11/06 The saddle-node of nearly homogeneous wave trains in reaction-diffusion systems. Minisymposium talk at SIAM Conference on Analysis of PDE, Boston.
- 5/4/06 Modulated wave trains in Riemann problems of atomic chains. Conference on Limit Problems in Analysis, Lorentz Center, Leiden, the Netherlands.
- 4/27/06 Modulated wave trains in Riemann problems of atomic chains. Conference on Dynamics of Nonlinear Waves, Groningen, the Netherlands.
- 3/30/06 Towards macro-limits of Riemann problems in atomic chains. Minisymposium talk, GAMM conference
- 12/14/05 Essential and absolute spectra, and their computation by continuation. University of Bristol, Department of Engineering Mathematics.
- 11/3/05 Geometry of travelling waves in Riemann problems for the hyperbolic limit of atomic chains. Workshop: Macroscopic Limits and Modulation Theory for PDEs and Lattice Models. Weierstraß Institute, Berlin
- 11/1/05 Pulse motion on a uniformly growing interval in the semi-strong limit of the Schnakenberg model. Newton Institute, Cambridge UK
- 7/27/05 The structure of essential and absolute spectra, and their computation by continuation. Minisymposium talk, Dynamics Days Berlin conference.
- 5/24/05 Bifurcation from heteroclinic networks with periodic orbits. Minisymposium talk, SIAM conference on applications of dynamical system.
- 4/27/05 Essential and absolute spectra, and their computation by continuation. Applied Math Seminar, University of Washington, Seattle.
- 7/21/04 Homoclinic bifurcation from heteroclinic cycles with periodic orbits and self-replication of pulses. Mathematical modelling of biological systems seminar, Max-Planck-Institute for Mathematics, Leipzig, Germany
- 11/17/03 An Organizing Center for Tracefiring of Pulses in the Oregonator. Workshop “Patterns in Physics”, The Fields Institute, Toronto, Canada
- 8/29/03 Instabilities of Pulses Leading to Backfiring and Tracefiring. Workshop “Trends in Pattern Formation”, Max-Planck-Institute for the Physics of Complex Systems, Dresden

Publications

Submitted Manuscripts

- J.D.M. Rademacher. *First and second order semi-strong interface interaction in multiscale reaction-diffusion systems.*
- A. Doelman, J.D.M. Rademacher, S van der Stelt. *Hopf dances near the tips of Busse balloons.*
- J.A. Sherratt, M.J. Smith, J.D.M. Rademacher. *Patterns of Sources and Sinks in the Complex Ginzburg-Landau Equation with Zero Linear Dispersion.*
- J.D.M. Rademacher. *Lyapunov-Schmidt Reduction for Unfolding Heteroclinic Networks of Equilibria and Periodic Orbits with Tangencies.*
- M. Herrmann, J.D.M. Rademacher. *Heteroclinic travelling waves in convex FPU-type chains.*

Peer reviewed Journals

1. M. Herrmann, J.D.M. Rademacher. *Riemann solvers and undercompressive shocks of convex FPU chains.* Nonlinearity 23 (2010) 277-304.
2. A.R. Champneys, E. Knobloch, V. Kirk, B.E. Oldeman, J.D.M. Rademacher. *Unfolding a tangent equilibrium-to-periodic heteroclinic cycle.* SIAM J. Appl. Dyn. Sys. (2009) 1261-1304.
3. M.J. Smith, J.D.M. Rademacher, J.A. Sherratt. *Absolute stability of wavetrains can explain spatiotemporal dynamics in reaction-diffusion systems of lambda-omega type.* SIAM J. Appl. Dyn. Sys. 8 (2009) 1136-1159.
4. J.A. Sherratt, M. Smith, J.D.M. Rademacher. *Locating the transition from periodic oscillations to spatiotemporal chaos in the wake of invasion.* Proc. Nat. Acad. Sc. 106 (2009) 10890-10895.
5. A.A. Shah, J. Brindley, A.C. McIntosh, J.D.M. Rademacher. *The effects of heat exchange and fluid production on the ignition of a porous solid.* Nonlinear Anal.: Real World Appl., 9 (2008) 562-584.
6. J.D.M. Rademacher, B. Sandstede, A. Scheel. *Computing absolute and essential spectra using continuation.* Physica D 229 (2007) 166–183
7. J.D.M. Rademacher, A. Scheel. *Instabilities of Wave Trains and Turing Patterns in Large Domains.* Int. J. Bif. Chaos 17 (2007) 2679–2691.
8. J.D.M. Rademacher, A. Scheel. *The saddle-node of nearly homogeneous wave trains in reaction-diffusion systems.* J. Dyn. Diff. Eq. 19 (2007) 479–496
9. J.D.M. Rademacher, S. Lippke. *Dynamic online-surveys and experiments with the free open software dynQuest.* Behavior Research Methods 39 (2007) 415–426 .
10. J.D.M. Rademacher. *Geometric Relations of Absolute and Essential Spectra of Wave Trains.* SIAM J. Appl. Dyn. Sys. 5 (2006) 634–649.
11. J.D.M. Rademacher, R.W. Wittenberg. *Viscous shocks in the destabilized Kuramoto-Sivashinsky equation.* J. Comp. Nonl. Dyn. 1 (2006) 336–347.
12. J.D.M. Rademacher. *Homoclinic orbits near heteroclinic cycles with one equilibrium and one periodic orbit.* J. Diff. Eq. 218 (2005) 390–443.

Reviews and Proceedings

13. M. Herrmann, J. Rademacher *Riemann problems in FPU chains.* Proc. Appl. Math. Mech. 7, 1042801-1042802 (2008). Special Issue ICIAM 07 and GAMM Meeting.
14. W. Dreyer, M. Herrmann, J.D.M. Rademacher. *Wave Trains, Solitons and Modulation in FPU Chains.* In: A. Mielke (Editor), Analysis, Modeling, and Simulation of Multiscale Problems. Springer Berlin Heidelberg, 2006
15. B. Fiedler, M.A. Efendiev, L. Lerman, J. Rademacher, and A. Schuppert. *Stability analysis for reactors from chemical industry.* Mathematics – key technology for the future, 175–183, Springer, Berlin (2003).
16. B. Fiedler, V. Gelfreich, J. Rademacher. *Datenbasierte Strukturanalyse [Structural Analysis Based on Data]* (German). Research report for Bayer AG, 40p. (2001).

Theses

17. J.D.M. Rademacher. *Homoclinic bifurcations from heteroclinic cycles with periodic orbits and trace-firing of pulses*. PhD thesis, University of Minnesota (2004).
18. J. Rademacher. *Dynamik von Wellen in schwach gekoppelten Oszillatorennetzen* (German). Diploma Thesis, Free University of Berlin (2000).

Teaching

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| Spring 2010 | Introduction to Pattern formation (lecture) University of Leiden |
| Spring 08 | Bifurcation theory (lecture) University of Amsterdam |
| Fall 04 | Partial differential equations (lecture), University of British Columbia |
| Spring 03 - 04 | Short Calculus (lecture), University of Minnesota (three semesters) |
| Spring 02 | IT Calculus 2 (recitation), University of Minnesota |
| Fall 01 | Topics in Elementary Mathematics II (interactive), University of Minnesota |
| Spring 01 | Order and Chaos (seminar), Free University of Berlin |
| Spring 01 | Real Analysis 1 (supervised Teaching Assistants), Free University of Berlin |
| Fall 99 | Dynamical Systems 1 (recitation), Free University of Berlin |
| Spring 99 | Real Analysis 2 (recitation), Free University of Berlin |
| Fall 98 | Real Analysis 1 (recitation), Free University of Berlin |
| Summer 98 | Dynamical Systems and Mathematical Modelling (self organized weeklong student workshop), Free University of Berlin |
| Spring 98 | Dynamical Systems 1 (recitation), Free University of Berlin |
| Fall 97 | Mathematics for Biologists (recitation), Free University of Berlin |
| Spring 97 | Real Analysis (reader), University of California Santa Cruz |

Affiliation and Service

- Organiser of the biweekly department seminar
- Organiser of the biannual “Dynamics of Patterns Day” symposia
- Referee for various journals such as *Physica D*, *SIAM J. Appl. Dyn. Sys.*, *Nonlinearity*
- Reviewer for *MathReviews* and *Zentralblatt für Mathematik*
- Member of AMS, SIAM and SIAM Activity Groups on Dynamical Systems and Coherent Structures
- Editor of SIAM DSWeb Media Gallery 2007-2009.
- Chief editor of SIAM DSWeb Magazine 2010-

Additional Information

- Invited lecturer at student workshop “Stability of nonlinear waves”, University of Washington, Seattle, Sept 2006
- Authored software: interactive simulation of reaction diffusion systems in comoving frames, cf. [17]; programs for computations of spectra, cf. [6]; DYNQUEST, a software for internet or PC based dynamic questionnaires, cf. [9]
- Award for artistic work at the Department of Mathematics, Free University of Berlin, 2000.