

Peter Hinow

CONTACT INFORMATION Department of Mathematical Sciences
University of Wisconsin – Milwaukee
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RESEARCH INTERESTS Applied Mathematics, Partial Differential Equations, Mathematical Biology

EDUCATION **Vanderbilt University**, Nashville TN, USA

Doctor of Philosophy, Mathematics, August 2007

- August 2002 – August 2007: graduate student of Mathematics at Vanderbilt University
- Thesis: Partial Differential Equation Models for Intranuclear Diffusion, Inverse Problems in Nanobiology and Cell Cycle Specific Effects of Anti-cancer Drugs
- Advisor: Professor Glenn F. Webb, PhD

Dresden University of Technology, Dresden, Germany

Diplom–Mathematiker (Dipl.–Math.), October 2000

- October 1995 – October 2000: student of Mathematics at the Dresden University of Technology
- Thesis: Moment Inequalities and Central Limit Properties of Isotropic Convex Bodies
- Advisors: Prof. Dr. Jürgen Voigt, Prof. Dr. Ulrich Brehm
- graduated with distinction (“mit Auszeichnung”)

University of Wisconsin, Milwaukee WI, USA

- August 1999 – December 1999 and January 2002 – July 2002: visiting student

PROFESSIONAL AND TEACHING EXPERIENCE

- August 2014 – present: associate professor of Mathematics, Department of Mathematical Sciences, University of Wisconsin – Milwaukee
- August 2009 – May 2014: assistant professor of Mathematics, Department of Mathematical Sciences, University of Wisconsin – Milwaukee
- September 2007 – August 2009: postdoctoral associate at the Institute for Mathematics and its Applications, University of Minnesota
- January 2002 – April 2007: graduate teaching assistant at University of Wisconsin – Milwaukee and Vanderbilt University
- February 2001 – December 2001: Assistant research and development with Deutsche Telekom AG, Darmstadt, Germany

GRANT SUPPORT

“Building Bridges to the Balkans - Mathematical Biology in Sofia 2014”, (National Science Foundation DMS-1401667, USD 20,000, 2014–2015); Co-PI, jointly with Hristo Kojouharov (University of Texas, Arlington, TX), Maya Mincheva (Northern Illinois University, De Kalb, IL) and Alicia Prieto Langarica (Youngstown State University, Youngstown, OH)

“Collaboration on Mathematical Biology” (Simons Foundation, USD 35,000, 2013–2018)

“Collaborative Research: Predicting the Release Kinetics of Matrix Tablets” (National Science Foundation DMS-1016214, USD 125,782, 2010–2014); PI, jointly with Ami Radunskaya (Pomona College, Pomona, CA)

PUBLICATIONS

The Mathematics of Drug Delivery (with A. Radunskaya), In: “Mathematical Modeling of Tumor-Immune Dynamics”, A. Eladdadi, P. Kim and D. Mallett (eds.), Springer Verlag, *to appear*

Swallowing a cellular automaton pill: predicting drug release from a matrix tablet (with E. Buchla, A. Nájera and A. Radunskaya), *Simulation*, **90**:227–237 (2014), [arXiv:1208.3447](#)

A nonsmooth program for jamming hard spheres, *Optim. Lett.* **8**:13–33 (2014), [arXiv:1209.4053](#)

Pathogen evolution in switching environments: a hybrid dynamical system approach (with J. Z. Farkas and J. Engelstädter), *Math. Biosci.* **240**:70–75 (2012), Corrigendum **241**:147–148 (2013), [arXiv:1104.3001](#)

Kinetics of bile salt binding to liposomes revealed by carboxyfluorescein release and mathematical modeling (with A. Radunskaya, I. Tucker and L. Yang), *J. Liposome Res.* **22**:237–244 (2012)

Steady states in hierarchical structured populations with distributed states at birth (with J. Z. Farkas), *Discr. Contin. Dyn. Sys. B* **17**:2671–2689 (2012), [arXiv:1004.3968](#)

Modeling the effects of drug binding on the dynamic instability of microtubules (with V. Rezaei, M. Lopus, M. A. Jordan and J. A. Tuszyński), *Phys. Biol.* **8**:056004 (2011), [arXiv:1010.4288](#)

Physiologically structured populations with diffusion and dynamic boundary conditions (with J. Z. Farkas), *Math. Biosci. Eng.* **8**:503–513 (2011), [arXiv:1004.4141](#)

The ciliate *Paramecium* shows higher motility in non-uniform chemical landscapes (with C. Giuffre, R. Vogel, T. Ahmed, R. Stocker, T. R. Consi and

J. R. Strickler), PLoS ONE **6**:e15274 (2011)

Mathematical analysis of a kinetic model for cell movement in network tissues (with T. Hillen and Z.-A. Wang), Discr. Contin. Dyn. Sys. B **14**:1055–1080 (2010), [arXiv:0807.2249](#)

Structured and unstructured continuous models for *Wolbachia* infections (with J. Z. Farkas), Bull. Math. Biol. **72**:2067–2088 (2010), [arXiv:0906.1676](#)

Semigroup analysis of structured parasite populations (with J. Z. Farkas and D. M. Green), Math. Model. Nat. Phenom. **5**:94–114 (2010), [arXiv:0812.1363](#)

On a size-structured two-phase population model with infinite states-at-birth (with J. Z. Farkas), Positivity **14**:501–514 (2010), [arXiv:0903.1649](#)

A continuous model for microtubule dynamics with collapse, rescue and nucleation (with V. Rezania and J. A. Tuszyński), Phys. Rev. E **80**:031904 (2009), [arXiv:0811.2245](#)

Predicting the drug release kinetics of matrix tablets (with B. Bäumer, L. Chatterjee, T. Rades, A. Radunskaya and I. Tucker), Discr. Contin. Dyn. Sys. B **12**:261–277 (2009), [arXiv:0810.5323](#)

A spatial model of tumor-host interaction: Application of chemotherapy (with P. Gerlee, L. J. McCawley, V. Quaranta, M. Ciobanu, S. Wang, J. M. Graham, B. P. Ayati, J. Claridge, K. R. Swanson, M. Loveless and A. R. A. Anderson), Math. Biosci. Eng. **6**:521–545 (2009), [arXiv:0810.1024](#)

Analysis of a model for transfer phenomena in biological populations (with P. Magal, F. Le Foll and G. F. Webb), SIAM J. Appl. Math. **70**:40–62 (2009)

A mathematical model quantifies proliferation and motility effects of TGF- β on cancer cells (with S. Wang, N. Bryce, A. M. Weaver, L. Estrada, C. L. Arteaga and G. F. Webb), Comput. Math. Methods Med. **10**:71–83 (2009), [arXiv:0710.5665](#)

A mathematical model separates quantitatively the cytostatic and cytotoxic effects of a HER2 tyrosine kinase inhibitor (with S. Wang, C. L. Arteaga and G. F. Webb), Theor. Biol. Med. Model. **4**:14 (2007)

Molecular seismology: An inverse problem in nanobiology (with E. M. Boczko), J. Theor. Biol. **246**:145–158 (2007)

The DNA binding activity of p53 displays reaction-diffusion kinetics. (with C. Rogers, C. E. Barbieri, J. A. Pietenpol, A. K. Kenworthy and E. DiBenedetto), Biophys. J. **91**:330–342 (2006)

Moment inequalities and central limit properties of isotropic convex bodies

(with U. Brehm, H. Vogt, and J. Voigt), Math. Z. **240**:37–51 (2002)

PAPERS IN

PREPARATION, Algebraic and topological indices of molecular pathway networks in human
CONTRIBUTIONS cancers (with E. A. Rietman and J. A. Tuszyński), *submitted*
TO CONFERENCES

Fitting snow chains to tires (with E. Jordaan, K. Gjøsteen, D. Nikolovski, and
S. Weißenberger), Proceedings of the 11th ECMI Modeling Week, Milan, Italy,
1998

Deterministic patterns in pseudorandom point sets (with P. Neumann and
M. Potužnik), Dresdner Schriften zur Mathematischen Stochastik, 7/1997,
Dresden University of Technology

RESEARCH

PRESENTATIONS Symposium on Biomathematics, Ecology, Education and Research, Claremont
CA, October 2014

Conference on Dynamical Systems and Applications (in honor of Prof. Peter
Kloeden's 65th birthday), Huazhong University of Science and Technology,
Wuhan, China, July 2014

Workshop on Application of Ecological and Mathematical Theory to Cancer,
National Institute for Mathematical Sciences (NIMS), Daejeon, Korea, May 2014

Workshop on Structured Integro-Differential Models in Mathematical Biology,
Wolfgang Pauli Institute, Vienna, Austria, April 2014

Seminar in Mathematics, University of Dundee, Dundee, United Kingdom,
January 2014

Colloquium in Mathematics, Northern Illinois University, DeKalb IL, September
2013

33rd South Eastern Atlantic Regional Conference on Differential Equations
(SEARCDE 33), University of Tennessee, Knoxville TN, September 2013

4th Conference on Computational and Mathematical Population Dynamics
(CMPD4), North University of China, Taiyuan, China, June 2013

Spring meeting of the American Mathematical Society, Ames IA, April 2013

Department of Mathematical Sciences Colloquium, University of Wisconsin,
Milwaukee WI, March 2013

Workshop on Mathematical Models of Tumor-Immune System Dynamics, University of Sydney, Sydney, Australia, January 2013

Symposium on Biomathematics, Ecology, Education and Research, St. Louis MO, November 2012

9th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando FL, July 2012

International Conference on Mathematical Methods and Models in Biosciences, Bulgarian Academy of Sciences, Sofia, Bulgaria, June 2012 (keynote presenter)

69th Midwest Partial Differential Equations Seminar, University of Illinois at Chicago, Chicago IL, April 2012

Colloquium in Mathematics, University of Louisiana, Lafayette LA, April 2012

Partial Differential Equations Seminar, Vanderbilt University, Nashville TN, March 2012

Mathematical Methods in Systems Biology 2, African Institute for Mathematical Sciences, Muizenberg, South Africa, January 2012

SIAM Conference on Analysis of Partial Differential Equations, San Diego CA, November 2011

Workshop on Mathematical Modeling of Intracellular Movements, National Institute of Mathematical and Biological Synthesis (NIMBioS), University of Tennessee, Knoxville TN, October 2011

8th European Conference on Mathematical and Theoretical Biology (ECMTB 11), Cracow, Poland, July 2011

3rd International Conference on Application of Mathematics in Technical and Natural Sciences (AMiTaNS 11), Albena, Bulgaria, June 2011

Summer meeting of the Canadian Mathematical Society, University of Alberta, Edmonton AB, June 2011

School of Pharmacy Seminar, University of Otago, Dunedin, New Zealand, January 2011

Workshop on PDE Models of Biological Processes, National Center for Theoretical Sciences, Hsinchu, ROC Taiwan, December 2010

MathFest 2010, Pittsburgh PA, August 2010

8th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Dresden, Germany, May 2010

Spring meeting of the American Mathematical Society, St. Paul MN, April 2010

Seminar in Mathematical Biology, University of Utah, Salt Lake City UT, March 2010

Mathematical Methods in Systems Biology, University of Tel Aviv, Tel Aviv, Israel, January 2010

H. Lee Moffitt Cancer Center and Research Institute, Tampa FL, November 2009

International Conference of Mathematical Sciences, Maltepe University, Istanbul, Turkey, August 2009

Multiscale Analysis of Self-Organization in Biology (poster), Banff International Research Station, Banff AB, Canada, July 2009

Seminar in Mathematical Biology, University of Glasgow, United Kingdom, May 2009

Mathematical Modeling in the Medical Sciences, Vanderbilt University, Nashville TN, May 2009

University of Paris VI “Pierre et Marie Curie” and INRIA Rocquencourt, France, January 2009

Winter workshop on Pharmacokinetics and Pharmacodynamics, Cordeliers Research Centre, Paris, France, December 2008

Fall meeting of the American Mathematical Society, Huntsville AL, October 2008

28th South Eastern Atlantic Regional Conference on Differential Equations (SEARCDE 28) University of Arkansas, Little Rock AR, October 2008

Workshop on Population Dynamics and Mathematical Biology, CIRM Luminy, Marseille, France, June 2008

Special session on Rational Drug Design, 91st Canadian Chemistry Conference, Edmonton AB, May 2008

Spring meeting of the American Mathematical Society, Bloomington IN, April 2008

Joint international meeting of the American and New Zealand Mathematical Societies, Victoria University of Wellington, New Zealand, December 2007

Seminar in Applied Mathematics, University of Minnesota, Minneapolis MN, October 2007

23rd IFIP TC 7 Conference on System Modelling and Optimization, Cracow, Poland, July 2007

6th International Congress on Industrial and Applied Mathematics (ICIAM 07), Zürich, Switzerland, July 2007

SIAM Conference on Control and Its Applications (CT 07), San Francisco CA, June 2007

University of Alberta, Edmonton AB, Canada, May 2007

Canadian Applied and Industrial Mathematics Society (CAIMS) annual meeting, Banff AB, Canada, May 2007

Arizona State University, Tempe AZ, April 2007, April 2009

Harvard Medical School, Harvard University, Boston MA, March 2007

University of California, Irvine CA, February 2007, October 2013

26th South Eastern Atlantic Regional Conference on Differential Equations (SEARCDE 26) University of North Carolina, Greensboro NC, October 2006

Vanderbilt Integrative Cancer Biology Center (VICBC) seminar, Vanderbilt University, Nashville TN, October 2005, March 2006, October 2006

German Cancer Research Center (DKFZ), Heidelberg, Germany, January 2006

56th Midwest PDE Seminar, Notre Dame University, Notre Dame IN, December 2005

Analysis & Biomathematics Seminar, Vanderbilt University, Nashville TN, October 2005, April 2007

Workshop on Quantitative Medical Data Analysis Using Math Tools and Statistical Techniques, Johnson City TN, October 2005

European Conference on Mathematical and Theoretical Biology (ECMTB 05, poster), Dresden, Germany, July 2005

SERVICE TO THE COMMUNITY Refereed ≈ 40 papers since 2007 for scientific journals in Mathematics, Physics and Computational Biology and grant proposals for the French National Re-

search Agency (ANR) and the National Science Foundation (NSF)

Speaker at the Vanderbilt University Undergraduate Seminar in Mathematics and at University of Minnesota Undergraduate Math Club 2002 – 2007, topics of talks included dynamical systems, mathematical physics, random walks and measure theory

Student member of the Department of Mathematics council, Dresden University of Technology, 1997 – 1999

CONFERENCES

AND WORKSHOPS ATTENDED Summer School on Integrative Cancer Biology, The Fields Institute, Toronto ON, August 2008

Application of Mathematics to Biomedical Problems, University of Otago, Dunedin, New Zealand, December 2007

SIAM–SMB Conference on the Life Sciences, Raleigh NC, August 2006

Cancer Modeling Workshop, University of Dundee, United Kingdom, June 2006

Barrett Lectures, University of Tennessee, Knoxville TN, April 2005

Mathematical Models of Cell Proliferation and Cancer Chemotherapy, Mathematical Biosciences Institute, Columbus OH, November 2003

22nd South Eastern Regional Conference on Differential Equations (SEARCDE), University of Tennessee, Knoxville TN, October 2002

11th ECMI Modeling Week, University of Milan, Italy, July 1998