Peter Hinow

CONTACT INFORMATION

Department of Mathematical Sciences
University of Wisconsin – Milwaukee
P.O. Box 413
Milwaukee, WI 53201-0413, USA

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RESEARCH INTERESTS

Differential Equations, Dynamical Systems, Biomathematics

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 Anticancer 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 2020 – present: professor of Mathematics, Department of Mathematical Sciences, University of Wisconsin – Milwaukee
- August 2014 – May 2020: 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, Deutsche Telekom AG, Darmstadt, Germany

PUBLICATIONS

[38] N. Salentine, J. Doria, C. Nguyen, G. Pinter, S. E. Wang, P. Hinow, A mathematical model of the disruption of glucose homeostasis in cancer patients, Bull. Math. Biol., **85**:58 (2023) biorxiv.org/content/10.1101/2023.03.15.532725v1

[37] J. Jurkiewicz, P. Hinow, A population dynamics approach to the distribution of space debris in Low Earth Orbit, Comm. Appl. Math. Comput., appeared online (2023) arxiv.org/abs/2210.16179

[36] M. Uttieri, P. Hinow, R. Pastore, G. Bianco, M. Ribera d'Alcalá, M. G. Mazzocchi, Homeostatic swimming of zooplankton upon crowding: the case of the copepod *Centropages typicus*, J. R. Soc. Interface **18**:20210270 (2021)

[35] J. Jurkiewicz, S. Kroboth, V. Zlochiver, P. Hinow, Automated feature extraction from large cardiac electrophysiological data sets, J. Electrocardiol. **65**:157-162 (2021) biorxiv.org/content/10.1101/2020.10.21.340968v2

[34] A. A. Alkhafaji, O. M. Selim, R. S. Amano, J. R. Strickler, P. Hinow, H. Jiang, P. C. Sikkel, N. Kohls, Mass transfer performance of a marine zooplankton olfactometer, J. Energy Resour. Technol., **143**:112102 (2021)

[33] P. Hinow, G. Pinter, W. Yan, S. E. Wang, Modeling the bidirectional Glutamine/Ammonium conversion between cancer cells and cancer-associated fibroblasts, PeerJ **9**:e10648 (2021)

[32] C. Giuffre, P. Hinow, H. Jiang, J. R. Strickler, Oscillations in the near-field feeding current of a calanoid copepod are useful for particle sensing, Sci. Rep. **9**:17742 (2019)

[31] M. Uttieri, P. Hinow, A. Nihongi, J. Motschman, H. Jiang, M. Alcaraz, J. R. Strickler, Copepod manipulation of oil droplet size distribution, Sci. Rep. **9**:547 (2019)

[30] W. Langhoff, A. Riggs, P. Hinow, Scaling behavior of drug transport and absorption in *in silico* cerebral capillary networks, PLoS ONE **13**:e0200266 (2018)

[29] P. Hinow, J. R. Strickler, J. Yen, Olfaction in a viscous environment: The "color" of sexual smells in *Temora longicornis*, Sci. Nat. **104**:46 (2017)

[28] W. Langhoff, P. Hinow, J. R. Strickler, J. Yen, Chemosensation and potential neuronal mechanism of ratio detection in a copepod, In: "Trends in Copepod Studies - Distribution, Biology and Ecology", M. Uttieri (ed.), Nova Science Publishers (2017)

[27] P. Hinow, M. Mincheva, Linear stability of delayed reaction-diffusion systems, Comput. Math. Appl. **73**:226–232 (2017)

[26] P. Hinow, A. Radunskaya, Ergodicity and loss of capacity for a random family of concave maps, Discr. Contin. Dyn. Sys. B. **21**:2193–2210 (2016)

[25] P. Hinow, A. Radunskaya, S. M. Mackay, J. N. J. Reynolds, M. Schroeder, E. W. Tan, I. G. Tucker, Signaled drug delivery and transport across the blood-brain barrier, J. Liposome Res. **26**:233–245 (2016)

[24] P. Hinow, A. Nihongi, J. R. Strickler, Statistical mechanics of zooplankton, PLoS ONE **10**:e0135258 (2015)

[23] P. Hinow, E. A. Rietman, S. I. Omar, J. A. Tuszyński, Algebraic and topological indices of molecular pathway networks in human cancers, Math. Biosci. Eng. **12**:1289–1302 (2015) arxiv.org/abs/1405.1462

[22] P. Hinow, A. Radunskaya, The Mathematics of Drug Delivery, In: "Mathematical Models of Tumor-Immune Dynamics", A. Eladdadi, P. Kim and D. Mallett (eds.), Springer Verlag, p. 109–123 (2014)

[21] E. Buchla, P. Hinow, A. Nájera, A. Radunskaya, Swallowing a cellular automaton pill: predicting drug release from a matrix tablet, Simulation

90:227–237 (2014) `arxiv.org/abs/1208.3447`

[20] P. Hinow, A nonsmooth program for jamming hard spheres, Optim. Lett. **8**:13–33 (2014) `arxiv.org/abs/1209.4053`

[19] J. Z. Farkas, P. Hinow, J. Engelstädter, Pathogen evolution in switching environments: a hybrid dynamical system approach, Math. Biosci. **240**:70–75 (2012), Corrigendum **241**:147–148 (2013) `arxiv.org/abs/1104.3001`

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

[17] J. Z. Farkas, P. Hinow, Steady states in hierarchical structured populations with distributed states at birth, Discr. Contin. Dyn. Sys. B **17**:2671–2689 (2012) `arxiv.org/abs/1004.3968`

[16] P. Hinow, V. Rezania, M. Lopus, M. A. Jordan, J. A. Tuszyński, Modeling the effects of drug binding on the dynamic instability of microtubules, Phys. Biol. **8**:056004 (2011) `arxiv.org/abs/1010.4288`

https://arxiv.org/abs/1010.4288 [15] J. Z. Farkas, P. Hinow, Physiologically structured populations with diffusion and dynamic boundary conditions, Math. Biosci. Eng. **8**:503–513 (2011) `arxiv.org/abs/1004.4141`

[14] C. Giuffre, P. Hinow, R. Vogel, T. Ahmed, R. Stocker, T. R. Consi, J. R. Strickler, The ciliate *Paramecium* shows higher motility in non-uniform chemical landscapes, PLoS ONE **6**:e15274 (2011)

[13] T. Hillen, P. Hinow, Z.-A. Wang, Mathematical analysis of a kinetic model for cell movement in network tissues, Discr. Contin. Dyn. Sys. B **14**:1055–1080 (2010) `arxiv.org/abs/0807.2249`

[12] J. Z. Farkas, P. Hinow, Structured and unstructured continuous models for *Wolbachia* infections, Bull. Math. Biol. **72**:2067–2088 (2010) `arxiv.org/abs/0906.1676`

[11] J. Z. Farkas, D. M. Green, P. Hinow, Semigroup analysis of structured parasite populations, Math. Model. Nat. Phenom. **5**:94–114 (2010) `arxiv.org/abs/0812.1363`

[10] J. Z. Farkas, P. Hinow, On a size-structured two-phase population model with infinite states-at-birth, Positivity **14**:501–514 (2010) `arxiv.org/abs/0903.1649`

[9] P. Hinow, V. Rezania, J. A. Tuszyński, A continuous model for microtubule dynamics with collapse, rescue and nucleation, Phys. Rev. E **80**:031904 (2009) `arxiv.org/abs/0811.2245`

[8] B. Bäumer, L. Chatterjee, P. Hinow, T. Rades, A. Radunskaya, I. Tucker, Predicting the drug release kinetics of matrix tablets, Discr. Contin. Dyn. Sys. B **12**:261–277 (2009) arxiv.org/abs/0810.5323

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

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

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

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

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

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

[1] U. Brehm, P. Hinow, H. Vogt, J. Voigt, Moment inequalities and central limit properties of isotropic convex bodies, Math. Z. **240**:37–51 (2002)

PAPERS IN PREPARATION, CONTRIBUTIONS TO CONFERENCES	K. Gjøsteen, P. Hinow, E. Jordaan, D. Nikolovski, S. Weißenberger, Fitting snow chains to tires, Proceedings of the 11th ECMI Modeling Week, Milan, Italy, 1998
	P. Hinow, P. Neumann, M. Potužnik, Deterministic patterns in pseudorandom point sets, Dresdner Schriften zur Mathematischen Stochastik, 7/1997, Dresden University of Technology
RESEARCH PRESENTATIONS	Research Seminar on Mathematical Optimization, Humboldt University, Berlin, Germany, June 2023
	Research Seminar, Institute for Scientific Computing, Ruprecht Karls University, Heidelberg, Germany, June 2023
	Oberseminar Analysis, Dresden University of Technology, Dresden, Germany,

May 2023

Seminar in Applied Mathematics, Charles University, Prague, Czech Republic, May 2023

Seminar in Applied Mathematics, Leibniz University, Hannover, Germany, April 2023

Colloquium in Mathematics, Western Washington University, Bellingham, WA, September 2022

Colloquium in Mathematics, University of Nevada, Reno, NV, April 2022

4th Annual Meeting of the SIAM Texas-Louisiana Section, University of Texas Rio Grande Valley, South Padre Island, TX, November 2021

Approximately 20 online seminar talks at institutions in India, Israel, South Africa, Germany, Czech Republic, Finland, Denmark, United Kingdom, Canada, and United States, October 2020-June 2022

Seventh International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems, Arizona State University, Tempe, AZ, October 2019

Colloquium in Mathematics, Purdue University Northwest, Hammond, IN, September 2019

Seminar in Biomathematics and Scientific Computing, Institute for Mathematics and Informatics, Bulgarian Academy of Sciences, Sofia, Bulgaria, July 2019

11th International Conference on Application of Mathematics in Technical and Natural Sciences, Albena, Bulgaria, June 2019

Conference on Multiscale Modeling in Biology (in honor of Prof. Hans Othmer's 75th birthday), University of Minnesota, Minneapolis, MN, May 2019

Colloquium in Mathematics, University of Louisiana, Lafayette, LA, April 2019

Colloquium in Mathematics, Northern Illinois University, DeKalb, IL, September 2018

Workshop on PDEs from Biology, Ecology and Life Sciences: Models and Analysis, Hong Kong Polytechnic University, Hong Kong, China, July 2018

12th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Taipei, Taiwan, July 2018

Spring Meeting of the American Mathematical Society, Portland, OR, April 2018

Research Seminar, Department of Pathology, University of California, San Diego, CA, September 2017

International Conference on Mathematical Methods and Models in Biosciences (Biomath 2017), Skukuza, Kruger National Park, South Africa, June 2017

Colloquium, Department of Mathematics and Applied Mathematics, University of Pretoria, Pretoria, South Africa, June 2017

Seminar in Applied Mathematics, Ohio State University, Columbus, OH, March 2017

Seminar in Earth and Atmospheric Sciences, Georgia Institute of Technology, Atlanta, GA, October 2016

Seminar in Applied Mathematics, University of Illinois, Urbana-Champaign, IL, September 2016

Oberseminar Analysis, Dresden University of Technology, Dresden, Germany, July 2016

11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, FL, July 2016

Workshop on Analysis and Quantification of Noisy Effects in Biological Systems, Huazhong University of Science and Technology, Wuhan, China, June 2016

Seminar in Applied and Computational Mathematics, University of Wisconsin, Madison, WI, March 2016

Spring Meeting of the American Mathematical Society, Athens, GA, March 2016

Geometry and Physics of Spatial Random Systems, Bad Herrenalb, Germany, September 2015

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

Seminar in Applied Mathematics, University of California, Irvine, CA, October 2013

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, 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

Arizona State University, Tempe, AZ, April 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

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

Arizona State University, Tempe, AZ, April 2007

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

University of California, Irvine, CA, February 2007

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 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

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

STUDENTS
ADVISED

PhD Students

Spencer Franks (Mathematics), Mathematical modeling of drug delivery to the brain, 2021 - present

Kimberly Harry (Mathematics), Mathematical modeling of drug delivery to the brain, 2021 - present

John Jurkiewicz (Mathematics), Segmentation and analysis of high-throughput electrophysiological data from multi-electrode arrays, 2017 - 2022; graduated with PhD

Joseph Barrera (Mathematics), main advisor was Prof. Hans Volkmer, co-chaired PhD committee when Prof. Volkmer was on medical leave, 2016-2017

MS Students

Vera Loeser (MS in Mathematics), Modeling of anticancer drug delivery by temperature-sensitive liposomes, 2016-2017

Justin Trulen (MS in Mathematics), Preventing the spread of the Dengue virus by controlling the vector *Aedes aegypti*, 2011–2012

SERVICE TO THE COMMUNITY	Member of editorial board: Discrete and Continuous Dynamical Systems - B (American Institute for Mathematical Sciences)
	Member of editorial board: Journal of Biological Dynamics (Taylor & Francis, London)
	Member of editorial board: Biomath (Bulgarian Academy of Sciences, Sofia)
	Member of editorial board: Mathematical Biosciences and Engineering (American Institute for Mathematical Sciences)
	Refereed over 170 papers since 2007 for scientific journals in Mathematics, Physics and Computational Biology and grant proposals for the French National Research 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
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