

Department of Mathematics and Computer Science
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ACADEMIC APPOINTMENTS

Assistant Professor Department of Mathematics and Computer Science Macalester College, St. Paul, MN	2007 - present
Assistant Professor Rossier School of Education University of Southern California, Los Angeles, CA	2006 - 2007
Assistant Director Center for Excellence in Teaching University of Southern California, Los Angeles, CA	2006 - 2007
Visiting Fellow Institute for Pure and Applied Mathematics University of California, Los Angeles, CA	Spring 2006
NSF-VIGRE Assistant Professor Department of Mathematics University of California, Los Angeles, CA	2003 - 2006
NSF-VIGRE Postdoctoral Fellow Department of Mathematics Duke University, Durham, NC	2002 - 2003

EDUCATION

Ph.D., Applied Mathematics Northwestern University, Evanston, IL Dissertation: Pattern formation in two-frequency forced Faraday Waves Advisor: Mary Silber	1998 - 2002
M.S., Applied Mathematics Northwestern University, Evanston, IL	1996 - 1997
A.B., Applied Mathematics Harvard University, Cambridge, Massachusetts <i>Cum laude</i> honors Area of application: biology	1992 - 1996

FUNDING / AWARDS

National Science Foundation	2006 - 2009
DMS - 0639749/0740484 (Sole PI)	\$209,679
Modeling and control of pattern-forming dynamical systems	
Northwestern University	
Henderson Dissertation Year Fellowship	2001 - 2002
NSF-IGERT Graduate Training Fellowship	2000 - 2002
Royal E. Cabell Graduate Fellowship	1996 - 1997

REFEREED PUBLICATIONS

1. A.J. Leverentz, C.M. Topaz and A.J. Bernoff. Asymptotic dynamics of attractive-repulsive swarms (submitted to SIAM J. App. Dyn. Sys.) 1 - 23.
2. J.A. Higdon and C.M. Topaz. Blogs and wikis as instructional tools: A social software adaptation of just-in-time teaching, College Teaching (to appear) 1 - 28.
3. C.M. Topaz, A.J. Bernoff, S. Logan and W. Toolson. A model for rolling swarms of locusts, Euro. Phys. J. (to appear) 1 - 18.
4. C.M. Topaz, A.L. Bertozzi and M.A. Lewis. A nonlocal continuum model for biological aggregation, Bull. Math Bio. 68 (7) (2006) 1601 - 1623.
5. R. Breban, I. McGowan, C.M. Topaz, E. Schwartz, P. Anton and S. Blower. Modeling the potential impact of rectal microbicides to reduce HIV transmission in bathhouses. Math. Biosci. Engin. 3 (3) (2006) 459 - 466.
6. C.M. Topaz, J. Porter and M. Silber, Multi-frequency control of Faraday wave patterns, Phys. Rev. E 70 (6) (2004) 066206.1 - 066206.16.
7. J. Porter, C.M. Topaz and M. Silber, Pattern control via multi-frequency parametric forcing, Phys. Rev. Lett. 93 (3) (2004) 034502.1 - 034502.4.
8. C.M. Topaz and A.L. Bertozzi, Swarming patterns in a two-dimensional kinematic model for biological groups, SIAM J. Appl. Math 65 (1) (2004) 152 - 174.
9. B. Cook, D. Marthaler, C.M. Topaz, A.L. Bertozzi, M. Kemp, Fractional bandwidth reacquisition algorithms for VSW-MCM, in A.C. Scultz, L.E. Parker, F.E. Schneider (Eds.), Multi-Robot Systems: From Swarms to Intelligent Automata, Vol. 2, (2003) 77 - 86.
10. C.M. Topaz and M. Silber, Resonances and superlattice pattern stabilization in two-frequency forced Faraday waves, Physica D 172 (1 - 4) (2002) 1 - 29.
11. M. Silber, C.M. Topaz and A.C. Skeldon, Two-frequency forced Faraday waves: Weakly damped modes and pattern selection, Physica D 143 (1 - 4) (2000) 205 - 225.

INVITED SEMINARS

Macalester College, Department of Biology	Nov. 2007
University of Southern California, Center for Excellence in Teaching	Apr. 2007
Drexel University, Department of Mathematics	Feb. 2007
Amherst College, Department of Mathematics and Computer Science	Feb. 2007
Macalester College, Department of Mathematics and Computer Science	Feb. 2007
College of William and Mary, Department of Mathematics	Feb. 2007
University of Delaware, Department of Mathematical Sciences	Jan. 2007
Claremont Graduate University, School of Mathematical Sciences	Dec. 2006
Kenyon College, Department of Mathematics	Nov. 2006
University of Southern California, Dept. of Aerospace and Mechanical Engineering	Oct. 2006
Bowdoin College, Department of Mathematics	Jan. 2006
Southern Methodist University, Department of Mathematics	Jan. 2006
University of Pittsburgh, Department of Mathematics	Jan. 2006
State University of New York at Buffalo, Department of Mathematics	Dec. 2005
University of Southern California, Department of Mathematics	Nov. 2005
University of California at Los Angeles, Department of Mathematics	Mar. 2005
Occidental College, Department of Mathematics	Feb. 2005
Northwestern University, Program on Complex Systems	Feb. 2005
University of Ontario Institute of Technology, Faculty of Science	Mar. 2004
North Carolina State University, Department of Mathematics	Apr. 2003
University of British Columbia, Department of Mathematics	Apr. 2003
Duke University, Department of Mathematics	Oct. 2002
Duke University, Center for Nonlinear and Complex Systems	Oct. 2002
Harvey Mudd College, Department of Mathematics	Feb. 2002
Olin College of Science and Engineering	Jan. 2002
Massachusetts Institute of Technology, Department of Mathematics	Dec. 2001

INVITED PRESENTATIONS

Active Motion and Swarms Conference, Humboldt University	Dec. 2006
Workshop on Swarming by Nature and Design, Inst. for Pure/Applied Mathematics	Mar. 2006
Gordon Research Conference on Nonlinear Science	Jun. 2005
Interacting Biological Agents Minisymposium, APS March Meeting	Mar. 2004
Patterns in Physics Conference, Fields Institute	Nov. 2003

CONTRIBUTED PRESENTATIONS

SIAM Conference on Applications of Dynamical Systems	May 2007
SIAM Conference on Applications of Dynamical Systems	May 2005
Dynamics Days Conference	Jan. 2005
SIAM Conference on Applications of Dynamical Systems	May 2003
SIAM Conference on Applications of Dynamical Systems	May 2001
APS Division of Fluid Dynamics Conference	Nov. 2000
International Congress of Theoretical and Applied Mechanics	Sep. 2000
APS Division of Fluid Dynamics Conference	Nov. 1999
SIAM Conference on Applications of Dynamical Systems	May 1999

TEACHING AWARDS / HONORS

Assistant Director, Center for Excellence in Teaching University of Southern California	2006 - 2007
Nominee, Copenhaver Award for Teaching with Technology University of California at Los Angeles	2006
Winner, Robert Sorgenfrey Distinguished Teaching Award Department of Mathematics, University of California at Los Angeles	2004
Nominee, Distinguished Alumni Undergraduate Teaching Award Duke University	2003
Fellow, Searle Center for Teaching Excellence Northwestern University	2000 - 2001

TEACHING EXPERIENCE

<i>Course title</i>	<i>Institution</i>	<i>Term</i>
Applied Calculus 135	Macalester College	Spring semester 2008
Scientific Computation 365	Macalester College	Spring semester 2008
Applied Calculus 135	Macalester College	Fall semester 2007
Mathematical Modeling 432	Macalester College	Fall semester 2007
Applied Numerical Methods I 151A	UCLA	Winter quarter 2006
Nonlinear Dynamical Systems 134	UCLA	Fall quarter 2005
Applied Numerical Methods I 151A	UCLA	Spring quarter 2005
Nonlinear Dynamical Systems 135A	UCLA	Winter quarter 2005

TEACHING EXPERIENCE (CONT.)

<i>Course title</i>	<i>Institution</i>	<i>Term</i>
Applied Numerical Methods I 151A	UCLA	Fall quarter 2004
Applied Numerical Methods I 151A	UCLA	Spring quarter 2004
Applied Numerical Methods II 151B	UCLA	Winter quarter 2004
Applied Numerical Methods I 151A	UCLA	Fall quarter 2003
Partial Differential Equations 133	Duke University	Spring semester 2003
Applied Mathematical Analysis II 114	Duke University	Fall semester 2002
Review of Calculus of One Variable 213 (TA)	Northwestern University	Fall quarter 1999
Review of Calculus of One Variable 213 (TA)	Northwestern University	Fall quarter 1998

UNDERGRADUATE RESEARCH ADVISING

<i>Student</i>	<i>Institution</i>	<i>Graduated</i>	<i>Topic</i>
Stephanie Abascal	Macalester College	2008	Pharmacokinetics of bisphenol-A
Innocent Dlamini	Macalester College	2008	HIV epidemic in Swaziland
Chris Dragga	Macalester College	2008	Ad-hoc mobile networks
Sarah Sutter	Macalester College	2008	Musical variations via chaos
Andrew Leverentz	Harvey Mudd College	2008	Attractive-repulsive swarms
Wyatt Toolson	Harvey Mudd College	2007	Rolling locust swarms
Sheldon Logan	Harvey Mudd College	2006	Rolling locust swarms
Zack Permutt	UCLA	2006	Control of Turing pattern formation
Catherine Beni	UCLA	2005	Network models of epidemics
Ryan Letchworth	Duke University	2003	Numerical wavelet methods for PDE
Ben Cook	Duke University	2003	Cooperative search strategies AUVs
Saroj Srisai	Northwestern University	2001	Impulsively forced Faraday waves

SERVICE TO PROFESSION

Referee	American Mathematical Monthly, Bulletin of Mathematical Biology, Discrete and Continuous Dynamical Systems, Journal of the Acoustical Society of America, Journal of Nonlinear Science, Journal of Statistical Physics, Journal of Theoretical Biology, Physica A, Physica D, Physical Review E, Physical Review Letters, SIAM Journal on Applied Dynamical Systems	Ongoing
Co-Editor	SIAM DSWeb Magazine	2007 - present

SERVICE TO PROFESSION (CONT.)

Co-Organizer	Minisymposium: Undergraduate research in dynamical systems SIAM Annual Meeting	Jul. 2008
Co-Organizer	Minisymposium: Individual and collective motion in biology SIAM Conference on Applications of Dynamical Systems	May 2007
Co-Organizer	Minisymposium: Models of biological swarms SIAM Conference on Applications of Dynamical Systems	May 2005
Co-Organizer	Interdisciplinary workshop: Biological and artificial swarms Institute for Pure and Applied Mathematics	Oct. 2003
Co-Organizer	Minisymposium: Swarming in biological and multi-agent systems SIAM Conference on Applications of Dynamical Systems	May 2003
Chair	APS Forum on Graduate Student Affairs Past Chair, Chair, Chair-Elect	2000 - 2003

SERVICE TO COLLEGE/UNIVERSITY

Member, Institutional Animal Care and Use Committee Macalester College	2007 - present
Member, Teaching Partners Program Macalester College	2007 - present
Mentor, LGBT Mentoring Program University of California at Los Angeles	2004 - 2006
Member, LGBT Resource Center Advisory Board University of California at Los Angeles	2003 - 2006

SERVICE TO DEPARTMENT

Liaison, 3/2 Engineering Program Macalester College, Department of Mathematics and Computer Science	2008 - present
Coordinator, Departmental Podcast Initiative Macalester College, Department of Mathematics and Computer Science	2007 - present
Volunteer Speaker, Pi Mu Epsilon Honor Society University of California at Los Angeles, Department of Mathematics	Winter 2005
Member, Differential Equations Curriculum Subcommittee University of California at Los Angeles, Department of Mathematics	2004

SERVICE TO DEPARTMENT (CONT.)

Panelist, Math 495: Teaching College Mathematics course University of California at Los Angeles, Department of Mathematics	Fall 2004
Volunteer Speaker, Graduate Student Outreach Program University of California at Los Angeles, Department of Mathematics	Fall 2004
Member, Executive Committee Northwestern University, Program on Dynamics of Complex Systems	2000 - 2001
Organizer, Student Seminar Series Northwestern University, Program on Dynamics of Complex Systems	2000 - 2001

PROFESSIONAL MEMBERSHIPS

American Mathematical Society (AMS)
American Physical Society (APS)
Mathematical Association of America (MAA)
Society for Industrial and Applied Mathematics (SIAM)
Society for Mathematical Biology (SMB)