

Departments of Mathematics &  
Electrical / Systems Engineering  
University of Pennsylvania



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## EDUCATION

<i>Cornell University, Ithaca, NY</i> <b>Ph.D. in Applied Mathematics</b>	<b>1995</b>
<i>Dissertation: "The Link of Periodic Orbits of a Flow" ; Advisor: Philip Holmes, Princeton Univ.</i>	
<i>Cornell University, Ithaca, NY</i> <b>M.S. in Applied Mathematics</b>	<b>1994</b>
<i>University of Toledo, Toledo, OH</i> <b>B.S. in Mechanical Engineering</b>	<b>1991</b>




## AWARDS




Chauvenet Prize for mathematical writing ( <i>MAA</i> )	<b>2013</b>
James Larson Distinguished Alumnus Award ( <i>University of Toledo, honors</i> )	<b>2012</b>
Good Teaching Award ( <i>University of Pennsylvania, Math</i> )	<b>2011-12</b>
S. Reid Warren Jr. teaching award ( <i>University of Pennsylvania, SEAS</i> )	<b>2009</b>
Andrea Mitchell PIK University Professorship ( <i>University of Pennsylvania</i> )	<b>2008</b>
Scientific American "Top 50" for research ( <i>with V. de Silva</i> )	<b>2007</b>
Richard & Margaret Romano Professional Scholar ( <i>University of Illinois</i> )	<b>2007</b>
University Scholar ( <i>University of Illinois</i> )	<b>2007</b>
PECASE: Presidential Early Career Award for Scientists & Engineers	<b>2004</b>
NSF CAREER Award	<b>2002</b>
Arnold O. Beckman Research Board Award ( <i>University of Illinois</i> )	<b>2002</b>
Outstanding Young Faculty Award ( <i>Sigma-Xi, Georgia Tech</i> )	<b>2000</b>
Freshman Partner of the Year ( <i>Georgia Tech</i> )	<b>2000</b>
Undergraduate Teaching Award ( <i>Mathematics, University of Texas, Austin</i> )	<b>1997</b>
NSF Postdoctoral Fellowship	<b>1995</b>
NSF Graduate Research Fellowship	<b>1991</b>

## RESEARCH AREA

*Topological Methods in Applied Mathematics*

## ACADEMIC APPOINTMENTS

 <b>Andrea Mitchell Penn Integrating Knowledge Professor</b> Departments of Mathematics and Electrical/Systems Engineering	<b>Fall 2008- present</b>
 <b>Professor</b> Department of Mathematics, Coordinated Science Laboratory, Information Trust Institute; University of Illinois	<b>Fall 2007- Summer 2008</b>
 <b>Research Associate Professor</b> Information Trust Institute, University of Illinois	<b>Spring 2007- Summer 2007</b>

	<b>Research Associate Professor</b> Coordinated Science Laboratory, University of Illinois	Fall 2004- Summer 2007
	<b>Associate Professor</b> Department of Mathematics, University of Illinois	Fall 2002- Spring 2007
	<b>Associate Professor</b> School of Mathematics, Georgia Institute of Technology	Spring 2002- Spring 2003
	<b>Assistant Professor</b> School of Mathematics, Georgia Institute of Technology	Fall 1998- Spring 2002
	<b>R. H. Bing Instructor</b> Department of Mathematics, University of Texas, Austin	Spring 1996- Spring 1998

## VISITING APPOINTMENTS

<b>Dow Scholar</b> Saginaw Valley State Univ., Michigan	Mar-Apr 2009
<b>Visitor</b> Isaac Newton Institute, Cambridge University	Oct 2000
<b>Visitor</b> Institute for Advanced Study, Princeton NJ	Fall 1995
<b>Exchange Scholar</b> PACM, Princeton University, Princeton NJ	Fall 1994- Fall 1995

## REFEREED PUBLICATIONS

1. S. Bhattacharya, R. Ghrist, and V. Kumar (2013), "Multirobot coverage and exploration on Riemannian manifolds with boundary", to appear, *Intl. J. Robotics. Res.*
2. Y. Baryshnikov, R. Ghrist, and M. Wright (2013) "Hadwiger's Theorem for Definable Functions", *Adv. in Math.*, 245, 573-586.
3. S. Bhattachayra, D. Lipsky, R. Ghrist, and V. Kumar (2013) "Invariants for Homology Classes with Application to Optimal Search and Planning Problem in Robotics", *Ann. of Maths. & Artificial Intelligence*, to appear.
4. J. Curry, R. Ghrist, and M. Robinson (2012) "Euler calculus with applications to signals and sensing," *AMS Proc. Symp. Appl. Math.*
5. M. Robinson and R. Ghrist (2012) "Topological localization via signals of opportunity," *IEEE Trans. Sig. Proc.*, 60(5), 2362-2373.
6. P. Dlotko, M. Juda, M. Mrozek, and R. Ghrist (2012) "Distributed computation of coverage in sensor networks by homological methods," *Applicable Algebra in Engineering, Communication and Computing*, to appear.
7. R. Ghrist and M. Robinson (2011) "Euler-Bessel and Euler-Fourier Transforms," *Inverse Problems*, 27(12), 124006.
8. Y. Baryshnikov, R. Ghrist, and D. Lipsky (2011) "Inversion of Euler integral transforms with applications to sensor data," *Inverse Problems*, 27(12), 124001.
9. M. Katsev, A. Yershova, B. Tovar, R. Ghrist, and S. LaValle (2011) "Mapping and Pursuit-Evasion Strategies for a Simple Wall-Following Robot," *IEEE Transactions on Robotics*, 27(1). 113-128.

10. Y. Baryshnikov and R. Ghrist (2010) "Euler integration for definable functions," *Proc. National Acad. Sci.*, 107(21), May 25, 9525-9530.
11. S. Alexander, R. Bishop, and R. Ghrist (2010) "Total curvature and simple pursuit on domains of curvature bounded above," *Geom. Dedicata*, 149(1), 275-290.
12. E. Chambers, V. de Silva, J. Erickson, and R. Ghrist (2010), "Rips complexes for planar point sets," *Disc. Comput. Geom.*, 44(1), 75-90.
13. R. Ghrist, "Configuration spaces, braids, and robotics," (2010) Lecture Note Series, Inst. Math. Sci., NUS, vol. 19, World Scientific, 263-304.
14. S. Alexander, R. Bishop, and R. Ghrist (2009) "Capture pursuit games on unbounded domains," *Ensiegn. Math.*, 55, 103-125.
15. Y. Baryshnikov and R. Ghrist (2009) "Target enumeration via Euler characteristic integrals," *SIAM J. Appl. Math.*, 70(3), 825-844.
16. R. Ghrist and R. Vandervorst (2009) "Braids and parabolic scalar PDEs," *Transactions Amer. Math. Soc.*, 361, 2755-2788.
17. R. Ghrist (2008) "Barcodes: The persistent topology of data," *Bull. Amer. Math. Soc.*, 45(1) 61-75.
18. R. Ghrist (2007) "Winding numbers for networks with weak angular data," in *Topology and Robotics, Contemporary Mathematics*, AMS.
19. V. de Silva and R. Ghrist (2007) "Homological sensor networks," *Notices Amer. Math. Soc.*, 54(1), 10-17.
20. V. de Silva and R. Ghrist (2007) "Coverage in sensor networks via persistent homology," *Alg. & Geom. Topology*, 7, 339--358.
21. R. Ghrist (2007) "On the contact geometry and topology of ideal fluids," *Handbook of Mathematical Fluid Dynamics*, Vol. IV., 1-38.
22. R. Ghrist and V. Peterson (2007) "The geometry and topology of reconfiguration," *Adv. Appl. Math.*, 38, 302-323.
23. V. de Silva and R. Ghrist (2006) "Coordinate-free coverage in sensor networks with controlled boundaries," *Intl. J. Robotics Research*, 25(12), 1205-1222.
24. R. Ghrist and S. LaValle (2006) "Nonpositive curvature and Pareto optimal motion planning," *SIAM J. Control & Opt.*, 45(5), 1697-1713.
25. E. Klavins, R. Ghrist, and D. Lipsky (2006) "The graph grammatical approach to self-organizing robotic systems," *IEEE Trans. Automatic Controls*, 51(6), 949-962.
26. R. Ghrist and R. Komendarczyk (2006) "Overtwisted energy-minimizing curl eigenfields," *Nonlinearity*, 19(1), 41-52.
27. R. Ghrist, J. O'Kane, and S. LaValle (2005) "Computing Pareto-optimal coordinations on roadmaps," *Intl. J. Robotics Research*, 12(11), 997-1010.
28. J. Etnyre and R. Ghrist (2005) "Generic hydrodynamic instability for curl eigenfields," *SIAM J. Appl. Dynamical Systems*, 4(2), 377-390.
29. A. Abrams and R. Ghrist (2004) "State complexes for metamorphic robots," *Intl. J. Robotics Research*, 23(7,8), 809-824.
30. R. Ghrist and E. Kin (2004) "Flowlines transverse to knot and link fibrations," *Pacific J. Math.*, 217(1), 61-86.
31. R. Ghrist, J.B. Van den Berg, and R.C. Vandervorst (2003) "Morse theory on braids with applications to Lagrangian systems," *Invent. Math.*, 152(2), 369-432.
32. J. Etnyre and R. Ghrist (2002) "Contact topology and hydrodynamics II: Solid tori," *Ergod. Thy. & Dyn. Sys.*, 22(3), 819-833.
33. J. Etnyre and R. Ghrist (2002) "Contact topology and Anosov flows," *Top. & its Appl.*, 124 (2), 211-219.

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34. R. Ghrist and D. Koditschek (2002) "Safe cooperative robot dynamics on graphs," *SIAM J. Cont. & Opt.*, 40(5), 1556-1575.
  35. A. Abrams and R. Ghrist (2002) "Finding topology in a factory: configuration space," *Amer. Math. Monthly*, 109, 140-150.
  36. R. Ghrist and R. Komendarczyk (2002) "Topological features of inviscid flows," in *Introduction to the Geometry and Topology of Fluid Flows*, NATO-ASI Series II, vol. 47, Kluwer Press, 183-202.
  37. J. Etnyre and R. Ghrist (2001) "An index for closed orbits in Beltrami fields," *Physica D*, 159(3-4), 180-189.
  38. R. Ghrist (2001) "Steady nonintegrable high-dimensional fluids," *Lett. Math. Phys.*, 55(3), 193-204.
  39. R. Ghrist (2001) "Configuration spaces of graphs and robotics," in *Braids, Links, and Mapping Class Groups: the Proceedings of Joan Birman's 70th Birthday*, AMS/IP Studies in Mathematics, vol. 24, 29-40.
  40. R. Ghrist, J.B.Vandenberg, and R.C. Vandervorst (2000) "Closed characteristics of fourth-order twist systems via braids," *C. R. Acad. Sci. Paris Ser. I*, 331, 861-865.
  41. J. Etnyre and R. Ghrist (2000) "Contact topology and hydrodynamics III: knotted orbits," *Trans. Amer. Math. Soc.*, 352, 5781-5794.
  42. R. Ghrist (2000) "Resonant gluing bifurcations," *Intl. J. Bifurcation and Chaos*, 10(9), 2141-2160.
  43. J. Etnyre and R. Ghrist (2000) "Contact topology and hydrodynamics I: Beltrami fields and the Seifert Conjecture," *Nonlinearity* 13, 441-458.
  44. J. Etnyre and R. Ghrist (1999) "Plane field flows," *Comment. Math. Helv.*, 74, 507-529.
  45. J. Etnyre and R. Ghrist (1999) "Construction of tight 3-manifolds via dynamics," *Proc. Amer. Math. Soc.*, 127, 3697-3706.
  46. J. Etnyre and R. Ghrist (1999) "Stratified integrals and unknots in inviscid flows," *Cont. Math.*, 246, 99-112.
  47. R. Ghrist and T. Young (1998) "From Morse-Smale to all links," *Nonlinearity*, 11, 1111-1125.
  48. R. Ghrist (1998) "Chaotic knots and wild dynamics", *Chaos, Solitons, and Fractals*, 9(4/5), 583-598.
  49. R. Ghrist (1997) "Branched 2-manifolds supporting all links," *Topology*, 36(2), 423-438.
  50. R. Ghrist (1997) "Accumulations of infinite links," *Topology and its Applications*, 81, 171-184.
  51. R. Ghrist and P. Holmes (1996) "An ODE whose solutions contain all knots," *Intl. J. Bifurcation and Chaos*, 6(5), 779-800.
  52. R. Ghrist (1995) "Flows on  $S^3$  supporting all links as orbits," *Electronic Research Announcements of the AMS*, 1(2), 91-97.
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## PROCEEDINGS

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1. R. Ghrist and S. Krishnan (2013), "A Topological Max-Flow-Min-Cut Theorem", *Proc. Global Sig. Inf. Proc.*
  2. S. Kim, S. Bhattachayra, R. Ghrist, and V. Kumar (2013) "Topological Exploration of Unknown and Partially Known Environments", in *Proc. IEEE Intl. Conf. on Intelligent Robots & Systems (IROS)*.
  3. J. Derenick, A. Speranzon, and R. Ghrist (2012) "Homological sensing for mobile robot localization," in *Proc. Intl. Conf. Robotics & Aut. (ICRA)*.
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4. S. Bhattachayra, R. Ghrist, and V. Kumar (2012) "Multi-Robot Coverage and Exploration in Non-Euclidean Metric Spaces", in *Proc. of Workshop on the Algorithmic Foundations of Robotics (WAFR)*.
5. R. Ghrist and Y. Baryshnikov (2011) "Unimodal category and topological statistics," *Proc. NOLTA: Nonlinear Theory & Applications*, 196-199.
6. R. Ghrist and Y. Hiraoka (2011), "Sheaves for network coding," *Proc. NOLTA: Nonlinear Theory & Applications*, 266-269.
7. R. Ghrist (2008) "Three examples of applied and computational homology," *Nieuw Archief voor Wiskunde* 5/9(2).
8. Y. Baryshnikov and R. Ghrist (2008) "Target enumeration via integration over planar sensor networks," in *Proc. Robotics: Science & Systems*.
9. J. Jung and R. Ghrist (2008) "Pareto optimal multi-robot coordination with acceleration constraints," in *Proc. Intl. Conf. Robotics & Automation*.
10. R. Ghrist (2006) "Braids and differential equations," in *Proc. International Congress of Mathematicians*, vol. III, 1-26.
11. R. Ghrist, D. Lipsky, S. Poduri, and G. Sukhatme (2006) "Node isolation in coordinate-free networks," in *Proc. Workshop on Algorithmic Foundations of Robotics*.
12. S. Alexander, R. Bishop, and R. Ghrist (2006) "Pursuit and evasion on non-convex domains of arbitrary dimensions," in *Proc. Robotics: Science & Systems*.
13. A. Yershova, B. Tovar, R. Ghrist, and S. LaValle (2005) "Bitbots: Simple robots solving complex tasks," in *Proc. AAAI*.
14. R. Ghrist and A. Muhammad (2005) "Coverage and hole detection in sensor networks via homology," in *Proc. Information Processing in Sensor Networks*.
15. V. de Silva, R. Ghrist, and A. Muhammad (2005) "Blind swarms for coverage in 2-d," in *Proc. Robotics, Systems and Science*.
16. R. Ghrist, J. O'Kane, and S. LaValle (2004) "Pareto optimal coordination on roadmaps," in *Proc. Workshop on Algorithmic Foundations of Robotics*, 2004.
17. R. Ghrist, and D. Lipsky (2004) "Grammatical self-assembly for planar tiles," in *Proc. Intl. Conf. on MEMS, Nano, and Smart Systems*.
18. E. Klavins, R. Ghrist, and D. Lipsky (2004) "Graph grammars for self-assembling robot systems," in *Proc. Intl. Conf. on Robotics & Automation*.
19. R. Ghrist (2002) "Shape complexes for metamorphic robots," in *Algorithmic Foundations of Robotics V*, J. Boissonnat et al. eds., *STAR 7*, Springer, 185-201.
20. R. Ghrist, E. Klavins, and D. Koditschek (2000) "Cyclic regulation of patterns," *Proc. Workshop on Algorithmic Foundations of Robotics*, B. Donald, K. Lynch, and D. Rus, eds., 205-220.
21. R. Ghrist and D. Koditschek (1999) "Safe Cooperative Robot Dynamics on Graphs," in *Hybrid Systems and AI: Modeling, Analysis and Control of Discrete and Continuous Systems*, AAAI, SS-99-05, 65-70.
22. R. Ghrist and D. Koditschek (1998) "Safe cooperative robot patterns via dynamics on graphs," *International Symposium on Robotics Research*, Y. Nakamura, Ed., Springer-Verlag, 81-92.
23. R. Ghrist and P. Holmes (1994) "Knotting within the gluing bifurcation," in *IUTAM Symposium on Nonlinearity and Chaos in Engineering Dynamics*, J. M. T. Thompson and S. R. Bishop, Ed., John Wiley Press, 299-315.
24. R. Ghrist and P. Holmes (1993) "Knots and orbit genealogies in three dimensional flows," in *Bifurcations and Periodic Orbits of Vector Fields*, NATO ASI Series C, Volume 408, Kluwer Academic Publishers, 185-239.

BOOKS AUTHORED



1. R. Ghrist, P. Holmes, and M. Sullivan (1997) *Knots and Links in Three-Dimensional Flows*, Lecture Notes in Mathematics, Volume 1654, Springer-Verlag.
2. R. Ghrist (2012) *FLCT: Funny Little Calculus Text*, ISBN GGKEY:W73KKFXWAGA: <http://books.google.com/books?id=HbbeRHUozJcC>
3. R. Ghrist (2011) *Applied Algebraic Topology & Sensor Networks*, web-only manuscript: [www.math.upenn.edu/~ghrist/preprints/ATSN.pdf](http://www.math.upenn.edu/~ghrist/preprints/ATSN.pdf)

## BOOKS EDITED

1. M. Farber, R. Ghrist, M. Burger, and D. Koditschek, eds., (2007) *Topology and Robotics*, Contemporary Mathematics, American Mathematical Society.

## PREPRINTS / IN PREPARATION

1. R. Ghrist, J.B. Van den Berg, R. Vandervorst, and W. Wojcik, "Braid Floer homology," submitted, [arXiv:0910.0647](https://arxiv.org/abs/0910.0647).
2. Y. Baryshnikov and R. Ghrist, "Unimodal category and the decomposition of distributions," preprint.
3. R. Ghrist, D. Lipsky, J. Derenick and A. Speranzon, "Topological landmark-based navigation and mapping", preprint.
4. Y. Cai and R. Ghrist, "Cyclic network automata and cohomological waves", preprint, [arXiv:1210.5232](https://arxiv.org/abs/1210.5232).
5. R. Ghrist and S. Krishnan, "Ten examples of network flow optimization via sheaves," in preparation.
6. R. Ghrist, *Elementary Applied Topology*, book in preparation.

## GRANTS [LEAD PRINCIPAL INVESTIGATOR]

- |     |  |             |
|-----|--|-------------|
| 1.  | <b>CoDoN: Categorification of Data over Networks</b><br>DARPA Defense Sciences Office (7/2012-1/2014)  | \$460,000   |
| 2.  | <b>ATSDaX: Algebraic-Topological Sensor Data Extraction</b><br>DDR&E (4/2012-12/2014)  | \$1,100,000 |
| 3.  | <b>Algebraic-Topological Structures for Hidden Modes</b><br>Office of Naval Research (12/2008-9/2012)  | \$360,000   |
| 4.  | <b>Discrete Topological Imaging in Multibounce Environments</b><br>DARPA Strategic Technology Office (4/2009-4/2010)   | \$120,000   |
| 5.  | <b>SToMP: Sensor Topology &amp; Minimal Planning</b><br>DARPA Defense Sciences Office (10/2006-10/2011)<br><i>8 co-PI institutions; &gt;12 mathematicians, engineers, &amp; scientists</i> | \$7,980,000 |
| 6.  | <b>Topological Tools for Sensors &amp; Systems</b><br>DARPA Defense Sciences Office (2/2005-2/2006)<br><i>co-PI: S. LaValle, UIUC</i>  | \$200,000   |
| 7.  | <b>PECASE: Topological Methods in Applied Mathematics</b><br>NSF Division of Mathematical Sciences (6/2002-6/2007)   | \$350,000   |
| 8.  | <b>Computational Topology of Configuration Spaces</b><br>A. O. Beckman Award, UIUC (9/2002-8/2003)   | \$6,000     |
| 9.  | <b>The Topology of Hydrodynamics</b><br>NSF Division of Mathematical Sciences (6/1999-5/2002)  | \$77,000    |
| 10. | <b>Knotted Periodic Orbits in Dynamical Systems</b><br>NSF Postdoctoral Fellowship (9/1995-8/1998)   | \$75,000    |

## GRANTS [CO-PRINCIPAL INVESTIGATOR]

1. **ANTIDOTE: Adaptive Networks for Threat and Intrusion Detection Or Termination** \$7,500,000  
ONR MURI (6/2009-5/2014)  
*PI: G. Sukhatme, USC; co-PIs at Penn, USC, MIT, CMU*
2. **Information Dynamics as Foundation for Network Management** \$7,090,000  
AFOSR MURI (6/2009-5/2014)  
*PI: M. Chiang, Princeton; co-PIs at Duke, Stanford, ASU, UWM, ...*
3. **SOLAR: Programming the Self-Assembly of Matter for Solar Energy Conversion** \$500,000  
NSF DMS (9/2009-8/2012)  
*PI: C. Kagan, Penn; co-PIs C. Epstein, C. Murray, V. Percec, Penn*
4. **Fundamental Geodesic Problems in Computational Topology** \$450,000  
NSF MSPA-MCS (8/2005-7/2008)  
*PI: J. Erickson, UIUC; co-PI: S. LaValle, UIUC*
5. **Multi-Scale Topological Analysis of Time-Evolving Shapes** \$400,000  
DARPA-NSF CARGO program (6/2002-5/2005)  
*PI: J. Rossignac, Georgia Tech; co-PIs: A. Szymczak, G. Turk, Georgia Tech*
6. **Topological Methods in Nonlinear Dynamics** \$38,000  
NSF East Asia & Pacific Program (6/2001-5/2004)  
*PI: K. Mischaikow, Georgia Tech; co-PI: T. Gedeon, Montana*

## CONSULTING

1. **Cohen-Segal LLP** July 2013  
*Legal consulting / expert witness*
2. **United Technologies Research Corporation** Summer 2011-12  
*Technical consulting*
3. **Finnegan, Henderson, Farabow, Garrett & Dunner, LLP** Summer 2010  
*Legal consulting / expert witness*
4. **Covington Burling, LLP** Winter 2009  
*Legal consulting / expert witness*

## DISTINGUISHED ADDRESSES

<i>Lecture</i>	<i>Location</i>	<i>Date</i>
Julian Clancy Frazier Lecture, USNA	Annapolis	Feb 7, 2013
Meyer Lecture, Technion	Haifa, IS	May 15, 2012
Trjitzinsky Lectures, Mathematics, UIUC	Urbana	Mar 6-8, 2012
Plenary address, SIAM Applied Algebraic Geometry	Raleigh	Oct 8, 2011
Norbert Wiener Lectures (3 lectures)	Tufts	Apr 5-9, 2010
De Leeuw lecture	Stanford	Mar 11, 2010
Wing Lectures (3 lectures)	Rochester	Oct 21-23, 2009
CBMS lecture series (10 lectures) on Applied Algebraic Topology	Cleveland	Aug 3-8, 2009
IMA New Directions lecture series (10 lectures) on Applied Topology	Minneapolis	Jun 15-26, 2009
Plenary address, SIAM Intl. Conf. on Applied Dynamical Systems	Snowbird	May 18, 2009
Dow Scholar public lecture, Saginaw Valley State Univ.	Michigan	Apr 1, 2009
Keynote address, IEEE Intl. Conference on Autonomic Computing	Chicago	Jun 4, 2008
IMS Tutorial Series on Robotics (2 lectures)	Singapore	Jun 18-19, 2007
RIMS Lecture Series on Sensor Networks (3 lectures)	Kyoto, JP	Jun 12-14, 2007
AMS National Meeting, Current Events Bulletin	New Orleans	Jan 7, 2007

<b>International Congress of Mathematicians, Dynamics Session</b>	Madrid, SP	Aug 25, 2006
<b>National Science Foundation MPS Distinguished Lecture</b>	Arlington	Nov 15, 2004
<b>AMS Invited Address Fall Sectional Meeting</b>	Evanston	Oct 23, 2004
<b>Journée de Rham</b>	Lausanne, CH	Mar 10, 2004

## SELECTED INVITED LECTURES

<i>Lecture</i>	<i>Location</i>	<i>Date</i>
<b>AMS/MAA Special Session</b>	San Diego, CA	Jan 10, 2013
<b>Plenary Lecture, IEEE SSP meeting</b>	Ann Arbor, MI	Aug 6, 2012
<b>Distinguished Lecturer Series (3 talks)</b>	Boston College, Boston MA	Apr 18-20, 2012
<b>Keynote Address</b>	American Univ. Washington DC	Mar 30, 2012
<b>Mathematics Colloquium</b>	Univ. Pittsburgh	Jan 13, 2012
<b>BUGCAT keynote address</b>	Binghamton, NY	Nov 13, 2011
<b>CATMI (Topology &amp; Medical Imaging) lecture</b>	Chipiona, Spain	Oct 18, 2011
<b>NOLTA (Nonlinear Theory &amp; Applications)</b>	Kobe, Japan	Sep 5, 2011
<b>Workshop on Applied Topology (4 lectures)</b>	Hakata, Japan	Sep 1-4, 2011
<b>IMA Summer School on Topological Methods</b>	Penn	Jul 25-29, 2011
<b>Applied Algebraic Topology Conference</b>	ETH Zurich	Jul 4, 2011
<b>Foundations of Computational Mathematics</b>	Budapest	Jul 12, 2011
<b>AMS MRC on Computational Topology (1 week)</b>	Snowbird, UT	Jun 19-25, 2011
<b>Army Research Office Strategic Planning</b>	Raleigh, NC	May 24, 2011
<b>Mathematics Colloquium</b>	Ohio State University	May 12, 2011
<b>Knots in Washington Workshop</b>	George Mason University	Apr 29, 2011
<b>Informatics Colloquium</b>	University of Edinburgh	Apr 12, 2011
<b>Topology Seminar</b>	University of Texas, Austin	Mar 25, 2011
<b>Dean's Lecture Series</b>	Binghamton University	Mar 10, 2011
<b>Applied Mathematics Colloquium</b>	Princeton University	Feb 21, 2011
<b>AMS Short Course in Applied Topology</b>	New Orleans, LA	Jan 4-5, 2011
<b>Electrical Engineering Colloquium</b>	Harvard University	Oct 29, 2010
<b>Workshop on Topology &amp; Abstract Analysis</b>	Youngstown, OH	Oct 16, 2010
<b>Workshop on Topological/Geometric Controls</b>	Madrid, Spain	Oct 4-6, 2010
<b>Mathematics Colloquium</b>	University of Toledo, OH	Sept 3, 2010
<b>Engineering Colloquium</b>	University of Toledo, OH	Sept 2, 2010
<b>ATMCS conference</b>	Muenster, Germany	Jun 24, 2010
<b>Series on Geometric Topology (3 hours)</b>	Colorado College, Colorado Springs, CO	Jun 10-12, 2010
<b>Georgia Topology Conference</b>	Univ. Georgia, Athens, GA	Jun 20, 2010
<b>Spring school on Applied Topology (7 lectures)</b>	University of Malaga, Spain	Jun 10-14, 2010
<b>Lecture series (7 hours) on Braids</b>	Universidad Complutense, Madrid, Spain	Jun 3-7, 2010
<b>Colloquium</b>	APL, Baltimore, MD	Mar 24, 2010
<b>Spring Topology &amp; Dynamics Conference</b>	Mississippi State University, MS	Mar 18, 2010
<b>GETCO workshop</b>	Aalborg, DK	Jan 12, 2010
<b>Mathematics-Physics-CS Colloquium</b>	UMass Boston, MA	Dec 1, 2009
<b>Brown-BU Dynamics Seminar</b>	BU, Boston, MA	Dec 2, 2009
<b>National Forum of Young Topologists (2)</b>	Tulane University, LA	Nov 13-4, 2009
<b>Mathematics Colloquium</b>	Penn State University, PA	Nov 12, 2009
<b>Mathematics Colloquium</b>	Temple University, PA	Nov 2, 2009
<b>AMS Special Session on Dynamics</b>	Boca Raton, FL	Oct 30, 2009
<b>Summer School on Machine Learning</b>	University of Chicago, IL	Jun 2, 2009
<b>Workshop on Topology and Complex Systems</b>	Rutgers University, NJ	Mar 4, 2009
<b>AAAS Minisymposium</b>	Chicago, IL	Feb 13, 2009
<b>AMS National Special Sessions (2)</b>	Washington DC	Jan 6, 2009
<b>Computer Science Colloquium</b>	Dartmouth University, NH	Nov 5, 2008
<b>Workshop on Applied Algebraic Topology</b>	Oberwolfach, DE	Jun 30, 2008
<b>Robotics: Science &amp; Systems</b>	Zurich, CH	Jun 26, 2008
<b>Mechanical Engineering Colloquium</b>	Cornell University, NY	Mar 25, 2008
<b>Mathematics Colloquium</b>	Cornell University, NY	Mar 24, 2008
<b>Mathematics Colloquium</b>	University of Pennsylvania, PA	Mar 18, 2008



<b>ESE Colloquium</b>	University of Pennsylvania, PA	Mar 17, 2008
<b>Mathematics Colloquium</b>	Duke University, NC	Jan 17, 2008
<b>SAMSI Workshop on Sensor Networks</b>	SAMSI, Research Triangle, NC	Jan 15, 2008
<b>DARPA TDA Annual Meeting</b>	San Jose, CA	Dec 10, 2008
<b>Workshop on Computational Geometry</b>	IBM Watson Research Center, NY	Nov 9, 2007
<b>AMS Special Session</b>	Albuquerque, NM	Oct 14, 2007
<b>Mathematical Sciences Lecture</b>	Bell Labs / Alcatel, NJ	Aug 15, 2007
<b>ICIAM Special Session</b>	Zurich, CH	Jul 18, 2007
<b>International Conference on Braids</b>	National University Singapore	Jun 25, 2007
<b>Aeronautics and Astronautics Colloquium</b>	Purdue University, IN	Mar 29, 2007
<b>MSRI Workshop on Applied Topology</b>	MSRI	Sep 20, 2006
<b>MSRI Workshop on Applied Topology</b>	MSRI	Sep 6, 2006
<b>MSRI Workshop on Applied Topology</b>	MSRI	Sep 5, 2006
<b>Robotics: Science &amp; Systems</b>	Philadelphia, PA	Aug 17, 2006
<b>Workshop on Topology &amp; Robotics</b>	ETH [FIM] Zurich, CH	Jul 11, 2006
<b>NSF Workshop on Sensor Networks</b>	University of California, Santa Barbara	Jun 12, 2006
<b>Conference on Dynamics &amp; Topology</b>	Bełdewo, Poland	Jun 7 2006
<b>Cornell Topology Festival</b>	Cornell University, NY	May 21, 2006
<b>Computational/Topological Dynamics</b>	Leiden University, Netherlands	May 15, 2006
<b>Mathematics Colloquium</b>	University of Illinois, Chicago	Mar 3, 2006
<b>Robotics Colloquium</b>	Carnegie-Mellon University	Feb 22, 2006
<b>Applied Mathematics Colloquium</b>	Princeton University	Nov 14, 2005
<b>Applied Dynamical Systems Workshop</b>	Université Montréal	Oct 17, 2005
<b>Foundations of Computational Mathematics</b>	Santander, Spain	Jun 30, 2005
<b>Robotics: Science &amp; Systems</b>	MIT	Jun 10, 2005
<b>Applied Mathematics Seminar</b>	University of Pennsylvania	May 20, 2005
<b>Mathematics Colloquium</b>	Institute for Advanced Study	May 19, 2005
<b>Bay Area Topology Seminar</b>	University of California, Davis	Apr 26, 2005
<b>Spring Topology &amp; Dynamics Conference</b>	Berry College, Rome, GA	Mar 18, 2005
<b>Dynamical Systems Seminar</b>	Cornell University	Mar 7, 2005
<b>Workshop on Visualization of Data</b>	MSRI	Dec 12, 2004
<b>Mathematics Colloquium</b>	Indiana University	Dec 3, 2004
<b>AMS Special Session</b>	Evanston, IL	Oct 23, 2004
<b>ICMENS Special Session</b>	Banff, Canada	Aug 26, 2004
<b>IUTAM Special Session</b>	Warsaw, Poland	Aug 19, 2004
<b>Algebraic Topological Methods in CS</b>	University Western Ontario, London, CA	Aug 19, 2004
<b>Applied Mathematics Colloquium</b>	Northwestern University	Apr 23, 2004
<b>Robotics Seminar</b>	University of Pennsylvania	Apr 2, 2004
<b>AMS Regional Meeting Special Session</b>	Ohio University	Mar 27, 2004
<b>Mathematics Colloquium</b>	Université de Genève, Switzerland	Mar 11, 2004
<b>AMS Regional Meeting Special Session</b>	Phoenix, AZ	Jan 10, 2004
<b>Geometry Seminar</b>	Penn State University	Dec 10, 2003
<b>Mathematics Colloquium</b>	University Illinois, Chicago	Nov 10, 2003
<b>Mathematics Colloquium</b>	Université Jaume, Castellon, Spain	Oct 28, 2003
<b>Workshop on Topological Robotics</b>	ETH, Zurich Switzerland	Jun 24, 2003
<b>Applied Mathematics Colloquium</b>	University of Delaware	Apr 22, 2003
<b>Midwest Dynamical Systems Meeting</b>	Northwestern University	Apr 6, 2003
<b>Spring Topology &amp; Dynamics Conference</b>	Texas Tech University	Mar 20, 2003
<b>Control and Dynamical Systems Seminar</b>	Cal Tech	Jan 8, 2003
<b>Algorithmic Foundations of Robotics</b>	Nice, France	Dec 15, 2002
<b>AMS Sectional Meeting Special Session</b>	Madison, WI	Oct 13, 2002
<b>New Directions in Dynamical Systems</b>	Kyoto University, Japan	Aug 10, 2002
<b>Intl. Conf. Dynamics &amp; DiffEqs</b>	Wilmington, NC	May 25, 2002
<b>DARPA/NSF CARGO Workshop</b>	Newport, RI	May 20, 2002
<b>Mathematics Colloquium</b>	University of Wisconsin, Madison	Jan 23, 2002
<b>Geometric Functional Analysis Seminar</b>	Penn State University	Jan 18, 2002
<b>Mathematics Colloquium</b>	Penn State University	Jan 17, 2002
<b>Mathematics Colloquium</b>	University of Illinois	Nov 28, 2001

<b>Florida Dynamics Conference</b>	University of Florida	Nov 10, 2001
<b>Mathematics Colloquium</b>	University of Wisconsin, Madison	Oct 29, 2001
<b>Geometry &amp; Topology Seminar</b>	University of Pennsylvania	Oct 11, 2001
<b>Applied Mathematics Colloquia (2)</b>	Cornell University	Mar 9-10, 2001
<b>Mathematics Colloquium</b>	University of Houston	Feb 14, 2001
<b>Dynamical Systems Seminar</b>	Leiden University, Netherlands	Dec 9, 2000
<b>Dynamical Systems Seminar</b>	Université Bourgogne, France	Nov 21, 2000
<b>Dynamical Systems Seminar</b>	Warwick University, UK	Nov 7, 2000
<b>Lecture Series on Topological Fluid Dynamics</b>	Dijon, FR	Jun 26-30, 2000
<b>Mathematics Colloquium</b>	University of Florida	Nov 1, 1999
<b>Mathematics Colloquium</b>	University of Southern Alabama	Oct 29, 1999
<b>Georgia Topology Conference</b>	University of Georgia, Athens	May 12, 1999
<b>AMS Regional Meeting Special Session</b>	Buffalo, NY	Apr 24, 1999
<b>Midwest Dynamical Systems Conference</b>	University of Michigan	Apr 17, 1999
<b>AMS National Meeting Special Session</b>	San Antonio, TX	Jan 14, 1999
<b>Differential Equations Seminar</b>	University of Michigan	Nov 18, 1998
<b>AMS Regional Meeting Special Session</b>	UNC Wake Forest	Oct 24, 1998
<b>Mathematics Colloquium</b>	University of Arizona	Sep 11, 1998
<b>J. Birman's 70th Birthday Celebration</b>	Columbia University	Mar 15, 1998
<b>Spring Topology &amp; Dynamics Conference</b>	George Mason University	Mar 13, 1998
<b>Dynamics Seminar</b>	University of California, Berkeley	Dec 10, 1997
<b>Applied Mathematics Colloquium</b>	Cornell University	Dec 5, 1997
<b>Topology Seminar</b>	Cornell University	Dec 3, 1997
<b>Applied Mathematics Colloquium</b>	Princeton University	Nov 3, 1997
<b>AMS Regional Meeting Special Session</b>	University of Wisconsin, Milwaukee	Oct 25, 1997
<b>Dynamics Seminar</b>	Georgia Tech	Oct 16, 1997
<b>Topology Seminar</b>	University of Michigan	Sep 22, 1997
<b>Midwest Dynamical Systems Conference</b>	University of Minnesota	Sep 20, 1997
<b>Dynamics Seminar</b>	Northwestern University	Jun 7, 1997
<b>Mathematics Colloquium</b>	University of Montana	Apr 26, 1997
<b>Mathematics Colloquium</b>	Rice University	Jan 30, 1997
<b>Workshop on Low-Dimensional Topology</b>	MSRI	Jan 23, 1997
<b>AMS Regional Meeting Special Session</b>	Cal Tech	Nov 16, 1996
<b>Intl. Workshop in Dynamics and Geometry</b>	PUC, Rio de Janeiro, Brasil	Aug 8, 1996
<b>AMS Regional Meeting Special Session</b>	University of Iowa	Mar 23, 1996
<b>Georgia Topology Conference</b>	University of Georgia	Aug 9, 1995
<b>Dynamics Seminar</b>	University of Texas, Austin	May 1, 1995
<b>North-East Dynamics Conference</b>	University of Connecticut	Apr 21, 1995
<b>Mathematics Colloquium</b>	University of Toledo	Feb 17, 1995
<b>Dynamics Seminar</b>	CUNY	Dec 6, 1994

## PROFESSIONAL SERVICE

<i>Member</i>	Program Committee, Joint MAA-AMS Conference	2011–2012
<i>Member</i>	International Advisory Board, Spanish Network of Topology	2011–2015
<i>Member</i>	Board of Governors, Institute for Mathematics & Applications (IMA)	2009–2011
<i>Organizer</i>	IMA Summer School on Topology & Complex Systems	2010–2011
<i>Organizer</i>	Minisymposium on Data, AAAS Annual Meeting, Chicago, IL	Jan 2009
<i>Member</i>	Scientific Committee, Będlewo Conference on Dynamics & Topology	2008–2009
<i>Member</i>	Program Committee, WAFR robotics conference	2008
<i>Member</i>	Associate Editor Committee, IROS robotics conference	2008
<i>Member</i>	Program Committee, Robotics: Science & Systems	2008
<i>Member</i>	NSF DMS review panel	2007
<i>Member</i>	Editorial board, <i>SIAM Journal of Applied Dynamical Systems</i>	2007–2010
<i>Member</i>	Program Committee, SANSI Program on Environmental Sensor Networks	2007
<i>Member</i>	American Mathematical Society Committee on Committees	2007–2009
<i>Co-Organizer</i>	ICIAM mini-symposium on Topology & Robotics	July 2007
<i>Co-Organizer</i>	ETH Workshop on Topology & Robotics	July 2006

<i>Member</i>	Editorial board, <i>Journal of Homology, Homotopy, &amp; Applications</i>	2006–2011
<i>Member</i>	Scientific Committee, Będlewo Conference on Dynamics & Topology	2005–2006
<i>Organizer</i>	AMS Special Session on Mathematical Robotics	Oct 2004
<i>Co-Editor</i>	SIAM Dynamical Systems Activity Group web magazine	2004–2005
<i>Member</i>	DARPA panel on Current Trends in Mathematics	2004
<i>Member</i>	NSF DMS review panel	2004
<i>Secretary/Treasurer</i>	SIAM Dynamical Systems Activity Group	2003–2005
<i>Co-organizer</i>	SIAM Snowbird Conference Special Session on Topological Methods	May 2003
<i>Member</i>	NSF DMS review panel	2001
<i>Member</i>	Spring Topology & Dynamics Steering Committee	2001–2002
<i>Co-organizer</i>	Georgia Topology Conference (Athens, GA)	July 2000
<i>Member</i>	NSF DMS panel on Mathematics & Robotics	May 2000
<i>Co-organizer</i>	AMS Special Session on Contemporary Dynamics	Oct 1999
<i>Co-organizer</i>	ICIAM Special Session on Applications of Knot Theory in Dynamics	Oct 1997
<i>Co-organizer</i>	AMS Special Session on Flows	Oct 1997
<i>Co-organizer</i>	Midwest Dynamical Systems Conference, Austin TX	Feb/Mar 1997

## UNIVERSITY SERVICE

<i>Organizer/lecturer</i>	SEAS pre-freshman mathematics program (Penn)	Summer 2012, 2013
<i>Lecturer</i>	SEAS GEMS program (Penn)	Summer 2012
<i>Member</i>	Penn Reading Program Committee (Penn)	Fall 2011 – present
<i>Chair</i>	Subcommittee on Integrated Studies : MS accreditation (Penn)	Fall 2011 – present
<i>Member</i>	Mathematics Rotate the Chair Committee (Penn)	Fall 2011
<i>Member</i>	Integrated Studies Admissions Panel (Penn)	Spring 2010 – Fall 2012
<i>Member</i>	Integrated Studies Committee, SAS (Penn)	Fall 2009 – present
<i>Member</i>	Faculty Personnel Committee, SEAS (Penn)	Fall 2009 – present
<i>Member</i>	Mathematics AP Exams Committee (Penn)	Fall 2010 – Spring 2012
<i>Member</i>	AMCS Graduate Admission Committee (Penn)	Fall 2008 – Spring 2011
<i>Member</i>	Mathematics Graduate Admission Committee (Penn)	Fall 2008 – Spring 2013
<i>Member</i>	Mathematics Strategic Senior Hiring Committee (UIUC)	Spring 2006 – Spring 2007
<i>Member</i>	Steering Committee: CAESAR (UIUC robotics center)	Fall 2006–Spring 2008
<i>Member</i>	Mathematics Chair Search Committee (UIUC)	Spring 2006
<i>Member</i>	Mathematics Grievance Committee (UIUC)	Fall 2005 – Spring 2007
<i>Member</i>	Faculty Senate (UIUC)	Summer 2004 – Spring 2006
<i>Member</i>	Mathematics Executive Committee (UIUC)	Summer 2003 – Spring 2005
<i>Organizer</i>	Reading Group [ALP] on Mathematical Robotics (UIUC)	Spring 2004
<i>Co-organizer</i>	Reading Group [RAP] on Computational Topology (UIUC)	Spring: 2003 – 2005
<i>Co-organizer</i>	Applied Mathematics Seminar (UIUC)	Fall: 2002 – 2004
<i>Organizer</i>	Reading Group [ALP] on Self-Assembly (UIUC)	Spring: 2003
<i>Member</i>	Mathematics Graduate Committee (Georgia Tech)	Fall 2001 – Spring 2002
<i>Co-organizer</i>	Gromov Seminar (Georgia Tech)	Fall: 2000 – 2001
<i>Member</i>	Mathematics Faculty Advisory Committee (Georgia Tech)	Fall 1999 – Spring 2001
<i>Co-organizer</i>	Dynamical Systems Seminar (Georgia Tech)	Fall 1998 – Spring 1999
<i>Co-organizer</i>	Topology/Geometry Seminar (Georgia Tech/Emory/UGA)	Fall 1998 – Spring 1999
<i>Member</i>	Introduction to Research Programming Committee (UT Austin)	Summer 1996 – Spring 1997
<i>Organizer</i>	Dynamical Systems Seminar (UT Austin)	Spring 1996 – Spring 1997

## COURSES TAUGHT

<i>Course title</i>	<i>Location</i>	<i>Level</i>	<i>Term</i>
Applied Algebraic Topology 680	Penn	Graduate	Fall 2013
Intro to Dynamic Systems 210	Penn	Undergraduate	Fall 2013
Calculus: Single Variable	Coursera	Undergraduate	Summer 2013
Calculus: Single Variable	Coursera	Undergraduate	Spring 2013
Integrated Studies : Knowing	Penn	Undergraduate	Fall 2012
Applied Dynamical Systems 412	Penn	Undergraduate	Fall 2012
Calculus II for engineers 214	Penn	Undergraduate	Spring 2012

Applied Dynamical Systems 412	Penn	Undergraduate	Fall 2011
Calculus I for engineers 204	Penn	Undergraduate	Fall 2011
Calculus II for engineers 214	Penn	Undergraduate	Spring 2011
Applied Dynamical Systems 412	Penn	Undergraduate	Fall 2010
Calculus I for engineers 204	Penn	Undergraduate	Fall 2010
Applied Dynamical Systems 412	Penn	Undergraduate	Fall 2009
Calculus III for Engineers 240	Penn	Undergraduate	Spring 2009
Differential Geometry 501	Penn	Undergraduate	Spring 2009
Applied Algebraic Topology 680	Penn	Graduate	Fall 2008
Calculus for Engineers 231	UIUC	Undergraduate	Fall 2007
Honors Calculus for Engineers 243	UIUC	Undergraduate	Spring 2007
Honors Calculus for Engineers 231	UIUC	Undergraduate	Fall 2006
Honors Calculus for Engineers 243	UIUC	Undergraduate	Spring 2006
Honors Calculus for Engineers 231	UIUC	Undergraduate	Fall 2005
General Topology 535	UIUC	Graduate	Spring 2005
Geometric Topology 534	UIUC	Graduate	Fall 2004
Differentiable Manifolds 520	UIUC	Graduate	Fall 2004
Mathematical Methods in ECE	UIUC	Undergraduate	Fall 2004
Differential Equations II 385	UIUC	Undergraduate	Spring 2004
Algebraic Topology I 430	UIUC	Graduate	Fall 2003
Mathematical Methods in ECE	UIUC	Undergraduate	Fall 2003
Differential Equations II 385	UIUC	Undergraduate	Spring 2003
Differential Equations 341	UIUC	Undergraduate	Fall 2002
Calculus II 1502H	Georgia Tech	Undergraduate	Spring 2002
Honors Calculus III 2411A	Georgia Tech	Undergraduate	Spring 2002
Calculus I 1501N	Georgia Tech	Undergraduate	Fall 2001
Honors Calculus III 2411C	Georgia Tech	Undergraduate	Spring 2001
Calculus I 1501N	Georgia Tech	Undergraduate	Spring 2001
Calculus III 2401A	Georgia Tech	Undergraduate	Spring 2000
Algebraic Topology II 6442	Georgia Tech	Graduate	Spring 2000
Algebraic Topology 6441A	Georgia Tech	Graduate	Fall 1999
Symplectic Topology 8143C	Georgia Tech	Graduate	Spring 1999
Calculus II 1508C1	Georgia Tech	Undergraduate	Winter 1999
Differential Topology 8143B	Georgia Tech	Graduate	Winter 1999
Calculus I 1507N2	Georgia Tech	Undergraduate	Fall 1998
Point-Set Topology 8143A	Georgia Tech	Graduate	Fall 1998
Applied Dynamical Systems	UT Austin	Undergraduate	Spring 1998
Calculus I	UT Austin	Undergraduate	Spring 1997
Introductory Topology	UT Austin	Undergraduate	Fall 1997
Abstract Algebra	UT Austin	Undergraduate	Spring 1996
Experimental Mathematics	Moravia, NY	High School	Spring 1994

## STUDENTS SUPERVISED

<i>Name</i>	<i>Topic</i>	<i>Level</i>	<i>Time</i>
P. Dlotko	Computational Homology	Postdoc	2013 -
V. Nanda	Computational Homology	Postdoc	2012 -
C. Jun	PDEs on Metric Spaces / Pursuit/Evasion	Postdoc	2012 -
S. Dong	Euler Calculus	Ph.D.	2012 -
S. Bhattacharya	Robot Motion Planning	Postdoc	2012 -
S. Krishnan	Applied Topology	Postdoc	2010 -
G. Henselman	Applied Topology	Ph.D.	2011 -
D. Lipsky	Applied Topology	Postdoc	2010 - 2013
R. Sazdanovic	Categorification	Postdoc	2010 -2013
Y. Cai	Networks & Communications	Ph.D.	2009 -
J. Curry	Applied Sheaf Theory	Ph.D.	2009 -
M. Robinson	Topological Imaging, Networks, & Sensing	Postdoc	2008 -2012

M. Wright	Geometric Measure Theory	Ph.D.	2009 - 2011
A. Friend	Euler Numerical Analysis	Graduate	2009
V. Peterson	Geometry and Topology of Reconfiguration	Ph.D.	2004 - 2009
J. Jung	Pareto-Optimal Coordination in Robotics	Ph.D.	2004 - 2008
N. Siricki	Geodesics in $Cat(0)$ spaces	Graduate	2005 - 2006
D. Lipsky	Topological Self - Assembly	Graduate	2004 - 2006
B. Sibley	Topological Matroids	Undergraduate	Spring 2006
T. Yang	Sensor Coverage and Homology	Undergraduate	Summer 2005
R. Komendarczyk	Spectral and Contact Geometry in Fluid Dynamics	Ph.D.	2000 - 2005
V. Shrikrishnan	Dihomotopy and Nonpositive Curvature	Undergraduate	Summer 2004
V. Morales-Duarte	Computing Configuration Spaces	Graduate	2000 - 2004
M. Wolak	Passive Assembly via Fences	Undergraduate	Fall 2003
K. Simon	Coordination Design for Robot Mechanisms	Undergraduate	Fall 2003
P. Szuta	Computational Topology of Sensors	Undergraduate	Summer 2003
T. Smith	Topology and High-Dimensional Automata	Undergraduate	Summer 2003
J. Grigaliunas	Controlled Self Assembly	Undergraduate	Spring 2003
A. Scukanec	Computational Homology for Robotics	Undergraduate	2001 - 2002
N. Bhakta	Computational Homology for Robotics	Undergraduate	2001 - 2002
K. Hamilton	Quasi Symmetry in Fluid Flows	Undergraduate	Spring 1998
K. Sexton	Dynamics of Coupled Oscillators	Undergraduate	1996 - 1997

## PUBLIC OUTREACH

<i>Event</i>	<i>Location</i>	<i>Audience</i>	<i>Date</i>
Public Lecture	Edinburgh, UK	general public	Jul 6, 2012
Engaging Minds	LA & SF	Penn alums	Jan 2012
Young Mathematicians Research Conference	Columbus, OH	undergraduates	Aug 20, 2011
International Science Festival	Edinburgh, UK	general public	Apr 12, 2011
Saturday Morning Math Group	UT Austin	Middle/high school kids	Mar 26, 2011
Engaging Minds	London, UK	Penn alums	Jan 22, 2011
Engaging Minds	New York City	Penn alums	Dec 4, 2010
Pi Mu Epsilon Induction	Toledo, OH	undergraduates	Sept 2, 2010
Pi Mu Epsilon Induction	Villanova	undergraduates	Apr 23, 2010
SIAM regional meeting	Shippensburg, PA	undergraduates	Mar 20, 2010
Penn State MASS Colloquium	State College, PA	high school/undergrad	Nov 12, 2009
GVSU Dow Scholar Public Lecture	Saginaw, MI	undergraduates	Apr 1, 2009
Philomathean Society Lecture	Philadelphia, PA	undergraduates	Feb 19, 2009
AAAS Minisymposium Address	Chicago, IL	scientists & press	Jan 13, 2009
IMA "Math Matters" Public Address	Minneapolis, MN	general public	Jan 22, 2009
IMS Public Address	NUS, Singapore	general public	Jun 26, 2007
Math Awareness Week Keynote Address	Bryn Mawr	undergraduates	Apr 16, 2007
UIUC IBM day	Urbana, IL	industry	Oct 20, 2005
MAA EPADEL Meeting	Easton, PA	undergraduates	Apr 16, 2005
MASS Colloquium	Penn State	undergraduates	Sept 14, 2000
University of Georgia Math Club	Athens, GA	high school/undergrad	Mar 31, 1999
Georgia Tech CEISMC Lecture	Atlanta, GA	high school teachers	Nov 4, 1998
UT Saturday Morning Math Group (4 lectures)	Austin, TX	high school	1996-1998
High School Recruiting Program	Austin, TX	high school	Jul 19, 1996
Undergraduate Research Symposium	Toledo, OH	undergraduates	Nov 23, 1996
Cornell School Outreach Program	Moravia, NY	high school	1993-1994

## PUBLICITY

<i>Venue</i>	<i>Description</i>	<i>Date</i>
<b>Chronicle of Higher Education</b>	article on MOOCs	May 21, 2013
<b>Philadelphia Inquirer</b>	article on Coursera's Penn Calculus	Feb 11, 2013



<b>New York Times</b>	article on Coursera's Penn Calculus	Jan 6, 2013
<b>Penn News</b>	article on GEMS teaching	Aug 6, 2012
<b>Penn Engineering News</b>	article on teaching award	Dec 2011
<b>Under the Button</b>	article on Funny Little Calculus Text	July 2011
<b>Penn Office of the President</b>	article on Integrated Studies Program	Feb 2011
<b>SIAM News 42(10)</b>	article on applied topology	Dec 2009
<b>Penn News</b>	article on PIK professorship	Jun 20, 2008
<b>Scientific American 1/2008, p. 44</b>	article of SciAm top 50 for 2007	Jan, 2008
<b>Science News 171 (18) p. 282</b>	article on topological sensor networks	May 5, 2007
<b>UIUC Inside Illinois 26 (17)</b>	announcement of 2007 University Scholar awardees	Apr 5, 2007
<b>AMS Press Release</b>	announcement of article on sensor networks	Dec 5, 2006
<b>Champaign News Gazette</b>	article on DARPA STOMP program	Oct 17, 2006
<b>Information Week</b>	article on DARPA STOMP program	Oct 16, 2006
<b>UIUC Inside Illinois</b>	announcement of CAESAR robotics center	Oct 10, 2006
<b>UIUC Press Release</b>	announcement of DARPA STOMP program	Oct 5, 2006
<b>UIUC Press Release</b>	announcement of Ghrist's lecture at ICM	Aug 15, 2006
<b>NSF Press Release</b>	announcement of 2004 PECASE winners	May 4, 2004
<b>Science 301 (5634) p. 756</b>	article on topology and robotics	Aug 8, 2003