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ADMINISTRATIVE/ORGANIZATIONAL POSITIONS

- Director, Dartmouth College Neukom Institute for Computational Science, 9/1/2011–present
- Member, Science Steering Committee, Santa Fe Institute, 2010–2016
- Member, External Advisory Committee, MIT Center for Brains, Minds, and Machines (NSF STC)
- Chair, Department of Mathematics, July 1, 2007-June 30, 2013
- Member, EE Just Advisory Committee
- Member, Center for Cognitive Neuroscience Advisory Committee
- Member, Committee Advisory to the President, Dartmouth College 2011–2012
- Member, Digital Dartmouth Strategic Planning Committee, 2011–2012
- Member, Faculty Steering Committee, Writing Summit 2012
- Member, Steering Committee, Dartmouth Year of the Arts, 2011–2012
- Chair, Committee on Priorities, Dartmouth College, 2009–2010, Member, 2008–2010
- Director, Santa Fe Institute Complex Systems Summer School, 2006–2010
- Organizer, “Innovation and Regulation Workshop,” (hosted by the Santa Fe Institute and Fidelity Investments), May 15, 2009.
- Chair, Visiting Committee, Department of Mathematics, Wellesley College, Spring, 2008.
- Chair, College Committee on Admissions and Financial Aid, Dartmouth College, 2007–2009
- Chair, Arnold Ross Public Lecture Committee, American Mathematical Society, 2009, Member, 2006-2009
- Chair, Short Course Subcommittee, American Mathematical Society, 2009-2011, Member, 2008-2011.
- Lead Mathematics Advisor, “Mathematics Revealed” Project, Annenberg Foundation, 2006-present (overseeing team of mathematicians and mathematics educators in the making of a 13 part video/text/web series funded by the Annenberg Foundation – see www.learner.org for freely available videos)
- Organizer, Special Session in Mathematics, AAAS Annual Meeting, 2007
- Advisory Committee, The Dartmouth AI Conference, the Next Fifty Years, Summer 2006
- Program Organizer, “Toward a New World of Information Processing,” January 19-20, 2006, Defense Advanced Research Projects Agency
- Vice-Chair, Mathematics, 1998-2004
- Chair Mathematics Search Committee, 2002-2005;
- Chair of Bioinformatics Search Committee, 2005

Assistant Director, Mathematical Sciences Research Institute Industrial Internship Program (MSRI IIP),
2005-2006

NSF MSRI Committee of Visitors (1998)

NSF DMS Committee of Visitors (1998)

Dartmouth College IRB (1998-2000)

COMMUNITY ADMINISTRATIVE POSITIONS

Member, Dresden and Hanover School Boards, 2014–2018

Member, Board of Trustees, Upper Valley Jewish Community, 2011–2015

Member, Board, Hanover Hockey Association, 2013–2015

ACADEMIC POSITIONS

William H. Neukom '64 Professor of Computational Science, (since June, 2011) Professor of Mathematics,
Dartmouth College (since 2000), Professor of Computer Science (since 2000), Member of MD./Ph.D.
Faculty, Member Faculty of Center for Cognitive Neuroscience;

John G. Kemeny Parents Professor of Mathematics (2006–2011)

(1996-2000) Dartmouth College, Departments of Mathematics and Computer Science, Associate Professor
(tenured joint appointment), Member of MD./Ph.D. Faculty;

(1991-1996) Dartmouth College, Department of Mathematics and Computer Science, Assistant Professor
(Adjunct Department of Computer Science, 1995).

(1989-1991) Columbia University, Department of Mathematics, Assistant Professor

(2000-2010) Santa Fe Institute, External Faculty

Visiting Positions: Institute for Advanced Study, Member (1995-1996, Fall 2002), NYU Courant Institute
(Fall 2000, 2001-2002), Santa Fe Institute (Fall 1999, Summer 2000, 2001, 2003,2004), National Center
for Atmospheric Research (Summers 1997, 1998, 1999), University of Chicago, Dept. of Computer
Science (Winter 1992, 1993), Harvard Univ., Dept. of Mathematics (1992)

EDITORIAL BOARDS, PROGRAM COMMITTEE

American Mathematical Society, Proceedings of Symposia in Applied Mathematics Editorial Committee
(01 February 2012 – 31 January 2016)

Princeton University Press, SFI Primers in Complex Systems series, Editorial Board

SPIE 2008, 2010 Computer Analysis in the Study of Art (Program Committee)

SPIE 2000, "Mathematical Methods in Biomedical Imaging " (Program Committee)

SIAM Review (Editorial Board 1998-2002)

Editor, Special Issue on Computer Algebra and Signal Processing, *Journal of Symbolic Computation*

BOARD MEMBERSHIPS

Coherent Path, Inc. (Advisory Board) 2013-present

InSite One (Scientific Advisory Board) 2002-2007

Memento Security (Advisory Board) 2007-2011

Poindexter Systems (Scientific Advisory Board) 2002-2004

(2000-2002) Defense Sciences Study Group (Institute for Defense Analyses - 2000-2002)

EDUCATION

Harvard University, Department of Mathematics M.A. Mathematics, May 1986.
Ph.D., June 1989.

Princeton University A.B. Mathematics, Cum Laude, 1984

AWARDS

SIAM I. E. Block Community Lecture, 2008

SIAM Visiting Lecturer 2007-2008

Sigma Xi Distinguished Lecturer, 2005-2007

Longlisted for the Aventis Science Writing Prize, 2006 for “Stalking the Riemann Hypothesis,” (Jonathan Cape, Publisher)

NSF Presidential Faculty Fellowship 1995 - 2000

NSF Postdoctoral Fellowship 1991 - 1993

IBM Graduate Fellowship, 1988

NSF Graduate Fellowship, 1985 - 1987

Fulbright Fellowship to Israel for Mathematics, 1984

Phi Beta Kappa, 1984

RECENT GRANT SUPPORT

NSF ISL “Rural Gateways: Fostering the Development of Rural Librarians as Informal Science Facilitators” (PI), 2015–2020, \$2,998,725.

Unrestricted Research Award, Adobe Systems, Inc., \$14,000.

Innovation Award (Dartmouth College), Think Big How Computation and the Big Data Viewpoint is Reshaping the Humanities (co-PI with Colleen Boggs), 2013-2014, \$20,000

NSF CC-NIE Networking Infrastructure: Infrastructure Upgrades for Advancing Discovery (co-PI) 2012-2014, \$473,324.00

AFOSR, “Dynamic Information Networks: Geometry, Topology, and Statistical Learning for the Articulation of Structure,” (PI) 2011-2014, \$748,000.

The Sloan Foundation, “Network Models of Systemic Risk,” (PI) 2010–2012, \$119,591.

NSF ISE “Pushing the Limits: Building Capacity to Enhance Public Understanding of Math and Science Through Rural Libraries” (PI), 2010–2014, \$2,508,018.

The Kress Foundation, “The Workshop Practices of Botticelli before Rome: Collaboration with Filippino Lippi in ‘The Story of Esther’, (PI) 2010–2011, \$20,000.

NSF SGER Digital Art Authentication Using Regularities in Spatial and Photometric Statistics, PI, 2008 – 2010, \$200,000

AFOSR, Analysis for Advanced Optical Communications, PI, 2006-2008, \$467,193

NIH Group Theoretic Methods in Protein Structure (co-PI), 2005-2009 \$ 441,147

Dartmouth College, Artificial Intelligence Turns 50, PI, \$ 85,000

NSF Documentary award “Living Math” (PI) 2002-2007 (\$300k)

NSF ITR for Quantum Computing and Circuit Complexity (PI), 2002-2006 (\$160)

NSF National fMRI Data Center, 1999 – 2006 (\$4.5M) (Co-PI)

NIH Networked IRB (co-PI), 2002-2003, (\$300k)

NSF Information Technology Research/SII, 2001-2003, \$574k, (Co-PI)

NSF Documentary Award \$120k (PI)

AFOSR \$175k, 2000–2003 (Co-PI)

Keck Foundation National fMRI Data Center, (\$1M) (Co-PI)

NSF Infrastructure Award for Computer Science, 1998 – 2003 (\$1.3M) (Co-PI)

NSF REU, 1998 (\$5k) (PI)

Dartmouth Interdisciplinary Initiation for Cognitive Neuroscience 1998 (\$30k) (PI)

NSF Presidential Faculty Fellowship 1995 - 2000 (\$500k) (PI)

BOOKS, FILMS, EXHIBITS

What are the Arts and Sciences? A Guide for the Curious, D. N. Rockmore, ed., UPNE, 376 pages, anticipated publication June 17, 2017 (see <https://www.amazon.com/What-Are-Arts-Sciences-Curious-ebook/dp/B01MRM0URS>)

Statistical Learning for Complex Systems (with G. Leibon and S. Pauls), Princeton Univ. Press, in preparation.

The Turing Tests in the Creative Arts, (w. M. Casey, K. Leuner, and A. Riddell), see <http://bregman.dartmouth.edu/turingtests/>

Concinnitas, a fine art print project with Parasol Press, Yale Art Gallery, and Bernard Jacobson Galleries. Openings at AnneMarie Verna Gallery (Zurich, SZ, Dec. 2014), Elizabeth Leach Gallery (Portland, OR, Jan. 2015), Greg Kucera Gallery (Seattle, WA, Jan. 2015), Yale Art Gallery (New Haven, CT, Jan. 2015).

The Birth of BASIC (a documentary film w. B. Drake and R. M. Murray), 2014.

Darwin's Extra Sense (a documentary film with W. Conquest and B. Drake), 2012.

Mathematics Illuminated (Host - as well as writer - for 13 part series surveying the world of mathematics), Distributed by Annenberg Learner, PO Box 55742, Indianapolis, IN 46205-0742; 800-532-7637 Produced by Oregon Public Broadcasting Directed by David Poulshock DVD, color, 6.5 hrs

From Mind to Machine - The Discovery of Artificial Intelligence (a documentary film with W. Conquest and B. Drake), 2007.

The Math Life (with W. Conquest and B. Drake), a 51 minute documentary about the people, process, and problems of modern mathematics. Distributed by Films for the Humanities and Sciences (www.flims.com) and (as of 3/10/03) appeared on at least 55% (and at most 90%) of the Public Television marketplace.

Stalking the Riemann Hypothesis, Random House/Pantheon, April, 2005.

Stalking the Riemann Hypothesis, (paperback) Pantheon Press, 2006, 304 pages, ISBN: 037542136X

Modern Signal Processing (w./ D. Healy - editors), Cambridge University Press, 2004.

Music and Computers: A Theoretical and Historical Approach (with P. Burk, L. Polansky, d. repetto, and M. Roberts), Key College Publishing, 2004.

Cyclic Renormalization and Automorphism Groups of Rooted Trees (with H. Bass, M. V. Espinar, and C. Tresser), Lecture Notes in Mathematics, Volume 1621, Springer-Verlag, NY 1996.

PUBLICATIONS/PAPERS UNDER REVIEW

Bending the Law, (w. G. Leibon, M. Livermore, R. Harder, and A. Riddell), preliminary version at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2740136, submitted for publication.

The Cultural Evolution of National Constitutions, (w. C. Fang, N. Foti, D. Krakauer, and T. Ginsburg), preliminary version at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2739824, submitted for publication.

The Supreme Court and the Judicial Genre (w. M. Livermore and A. Riddell), *Arizona Law Review*, to appear, December 2017

The Efficient Computation of Fourier Transforms on Semisimple Algebras (w. D. Maslen and S. Wolff), *Journal of Fourier Analysis and its Applications*, 2017, to appear.

Separation of Variables and the Computation of Fourier Transforms on Finite Groups, II (w. D. Maslen and S. Wolff), *Journal of Fourier Analysis and its Applications*, 2016, pp. 1–59; doi:10.1007/s00041-016-9516-4

A Quantitative Analysis of the Writing Style of the Supreme Court (w.K. Carlson and M. Livermore). *Washington University Law Review*, Vol. 93, No. 6, 2016; Virginia Public Law and Legal Theory Research Paper No. 3. Available at SSRN: <http://ssrn.com/abstract=2554516>

The History of the FFT, in the Princeton Companion to Applied Mathematics, N. Higham et al. (eds.), Princeton University Press, 2015, pp. 9495.

The Mathematics of Adaptation, (w. D. Krakauer) in the Princeton Companion to Applied Mathematics, N. Higham et al. (eds.), Princeton University Press, 2015, pp. 591597.

A Spectral Clustering Approach to the Structure of Personality: Contrasting the FFM and HEXACO Models (w. T. Bates, S. Brocklebank, and S. Pauls), *Journal of Research in Personality*, 57 (2015) 100109.

A Spectral Analysis Approach for Experimental Designs (w. R.A. Bailey, P. Diaconis, and C. Rowley), *Excursions in Harmonic Analysis*, Excursions in Harmonic Analysis: The February Fourier Talks at the Norbert Wiener Center. ed. / R. Balan; M. Begu; J. J. Benedetto; W. Czaja; K. A. Okoudjou. Vol. 4 Birkhuser Basel, 2015. p. 367-395

The Social Identity Voting model: ideology and community structures (w. S. Pauls and G. Leibon), *Research and Politics*, DOI: 10.1177/2053168015570415, May 2015

Overlapping Portfolios, Contagion, and Financial Stability (w./F. Caccioli, D. Farmer, and N. Foti), *J. Econ. Dynamics and Control*, Volume 51, February 2015, pp. 50–63.

- We the Peoples: The Global Origins of Constitutional Preambles (w./T. Ginsburg and N. Foti), *George Washington International Law Review*, Volume 46, Issue 2, pp. 305–340.
- Bayesian learning of sparse multiscale image representations (w. J. M. Hughes and Y. Wang), *IEEE Transactions in Image Processing*, volume 99, December, 2013, pp. 4972– 4983.
- Orienteering in Knowledge Spaces: The Hyperbolic Geometry of Wikipedia Mathematics (w/G. Leibon), *PLoS ONE*, 8(7): e67508. doi:10.1371/journal.pone.0067508 (2013).
- Stability of the world trade network over time: an extinction analysis (w./ N. Foti, and S. Pauls), *Journal of Economic Dynamics and Control*, **37**(9) 1889–1910 (2013), <http://dx.doi.org/10.1016/j.jedc.2013.04.009>.
- Empirical mode decomposition analysis for visual stylometry (w/J. M. Hughes, D. Mao, Y. Wang, and Q. Wu), *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 34 (11),2147– 2157 (2012) .
- Quantitative patterns of stylistic influence in the evolution of literature, (w/.N. Foti, J. M. Hughes, D. Krakauer), *PNAS*, Vol. 109(20) 7682–7686 (2012).
- Partition decoupling for multi-gene analysis of gene expression profiling data (w./R. Braun, G. Leibon, and Scott Pauls), *BMC Bioinformatics*, 2011, 12:497 doi:10.1186/1471-2105-12-497.
- Statistics, vision, and the analysis of artistic style (w./D. Graham, J. Hughes, and H. Leder), *WIREs Computational Statistics*, Published Online: Sep 30 2011 DOI: 10.1002/wics.197
- Nonparametric sparsification of complex multiscale networks (w./N. Foti and James M. Hughes), *PLoS ONE*, 6(2): e16431. doi:10.1371/journal.pone.0016431 (2011).
- Intelligent data analysis of intelligent systems, (w./D. C. Krakauer, J. C. Flack, S. Dedeo, and D. Farmer, *Advances in Intelligent Data Analysis IX* 6065:8-17(2010).
- Improved IBD detection using incomplete haplotype information (w./G. Genovese, G. Leibon, and M.Pollak), *BMC Genetics*, Volume 11:58 (2010).
- The packet-switching brain (w./D. Graham), *J. of Cognitive Neuroscience*, Early Access Posted Online March 29, 2010. (doi:10.1162/jocn.2010.21477).
- Deblurring of motionally averaged images with applications to single-particle cryo-electron microscopy, (w./G. Chirikjian, W. Park, and D. Madden), arXiv: 0710.0690, *Inverse Problems*, Volume 26, Number 3, March 2010 doi: 10.1088/0266-5611/26/3/035002.
- Quantification of artistic style through sparse coding analysis in the drawings of Pieter Bruegel the Elder (w./J. Hughes and D. Graham), *Proceedings of the National Academy of Sciences USA*, vol. 107, no. 4, pp. 1279–1283, 2010.
- Fast Fourier transforms for the rook monoid, (w./M. Malandro) *Transactions of the AMS*, **362**(2) pp. 1009 – 1045, (2010).
- Accurate image rotation using Hermite expansions (w./G. Chirikjian, W. Park, and G. Leibon), *IEEE Transactions on Image Processing*, **18**(9) pp. 1988–2003, (2009).
- Mapping the similarity space of paintings: Is there a role for image statistics? (w./D. J. Graham, J. N., Friedenber, and D. J. Field.), *Visual Cognition*, July 15, 2009, DOI: 10.1080/13506280902934454.
- A mathematical model for optimal tuning systems (w./L. Polansky, M.K. Johnson, D. Repetto and W. Pan), *Perspectives in New Music*, **47**(1), p. 69–110, 2009.
- Topological structures in the equities market, (w./G. Leibon, S. Pauls, R. Savell), *PNAS*, 105(52):20589-94, 2008.
- A fast Hermite transform, (w./G. Leibon, R. Taintor, G. Chirikjian, and W. Park), *Theoretical Computer Science*, 409(2): 211-228 (2008).

- Evolution of community structure in the world trade web, (w./I. Tzekina and K. Danthi), *European J. Phys. B*, **63**, 541-545 (2008) DOI: 10.1140/epjb/e2008-00181-2
- A SNP Streak Model for the Identification of Genetic Regions Identical-by-descent, (w./G. Leibon and M. Pollak), *Statistical Applications in Genetics and Molecular Biology*, **7**(1), Article 16 (2008). (Available at: <http://www.bepress.com/sagmb/vol7/iss1/art16>)
- FFTs on the Rotation Group (w./P. Kostelec), *Journal of Fourier Analysis and Applications*, **14**(2) 145–179, (2008).
- The Power of Strong Fourier Sampling: Quantum Algorithms for Affine Groups and Hidden Shifts (w./C. Moore, A. Russell, and L. Schulman), *SIAM J. Computing*, **37**, 938–958 (2007)
- Steps toward Digital Authentication (w./G. Leibon), in *Matematica e cultura, 2007*, Michele Emmer (ed.), Springer-Verlag.
- Generic Quantum Fourier Transforms (w./C. Moore and A. Russell), *ACM Transactions on Algorithms*, **2**(4), pp. 707–723, 2006.
- A Digital Technique for Authentication in the Digital Arts (w./S. Lyu and H. Farid), *International Foundation for Art Research Journal*, spring, 2006.
- A Digital Technique for Art Authentication (w./S. Lyu and H. Farid), *PNAS*, vol. 101 (49), pp. 17006-17010 (2004).
- Rooted trees and iterated wreath products of cyclic groups (with R. Orellana and D. Rockmore), *Adv. in Appl. math.*, vol. 33, No. 3, (2004), 531-547.
- Sharing Neuroimaging Studies of Human Cognition, (w./ J. D. Van Horn, S. T. Grafton, and M. S. Gazzaniga), *Nature Neuroscience*, **7**, (2004), 473–481.
- Recent Progress in Group FFTs, in *Computation Noncommutative Algebra and Applications*, J. Byrne ed., Kluwer Acad. Pub., Netherlands, (2004) pp. 227–254.
- Towards Safe and Effective High-Order Legendre Transforms with Applications to FFTs for the 2-sphere, (w/D. M. Healy Jr. and P. Kostelec), *Advances in Computational Mathematics* **21** (1-2): 59-105, July 2004
- Two-dimensional wreath product transforms (with R. Foote and G. Mirchandani), *J. Symb. Comp.*, **37** (2) pp. 187–207, (2004).
- Computing isotypic projections with the Lanczos iteration (w./D. Maslen and M. Orrison), *SIAM J. Matrix Analysis and Applications*, **25** (3), 784–803, (2004).
- Generic Quantum FFTs (w/ C. Moore and A. Russell), *Proceedings of ACM-SIAM Symposium On Discrete Algorithms. 2004*, pp. 771-780.
- The Hidden Subgroup Problem in Affine Groups: Basis Selection in Fourier Sampling (w/ C. Moore, A. Russell, and L. Schulman), *Proceedings of ACM-SIAM Symposium On Discrete Algorithms. 2004*, pp. 1106–1115.
- Eigenvalues spacings for quantized cat maps (with A. Gamburd and J. Lafferty), *J. Phys A*, **36** (2003), no. 12, 3487–3499.
- FFTs for the 2-Sphere – Improvements and Variations (w/D. Healy, P. Kostelec and S. Moore), *J. Fourier Analysis and Appl.* **9** 4: 341–385, July 2003
- Data Mining and Network Analysis in the Life and Social Sciences: Potential Opportunities for the DoD and National Security, in IDA Paper P-3704, Defense Science Study Group 2000-2001 Papers 1-11, December 2002.
- Landscapes on spaces of trees (with O. Bastert, P. Stadler, and G. Tinhofer), *Appl. Math. Comput.*, **131** (2002), no. 2-3, 439–459.

- Fast Fourier transforms for fitness landscapes (with W. Hordijk, P. Kostelec, and P. Stadler) to appear in *Applied and Computational Harmonic Analysis*, **12** No. 1, Jan 2002, pp. 57-76.
- The Cooley-Tukey FFT and group theory (with D. Maslen) *Notices Amer. Math. Soc.* **48**(10), 2001, pp. 1151-1160.
- The Functional Magnetic Resonance Imaging Data Center (fMRIDC): the challenges and rewards of large-scale databasing of neuroimaging studies (with J. D. Van Horn, et. al.), *J. Roy. Soc.* **356** No. 1412, August 2001
- Nonlinear approximation theory on compact groups (with K.-L. Kueh, T. Olson, and K.-S. Tan), *J. Fourier Analysis and Appl.*, **7** No. 3, 2001, pp. 257-281
- Double coset decompositions and computational harmonic analysis on groups (with D. Maslen), *J. Fourier Anal. Appl.* **6**(4), 2000, pp. 349-388.
- FFTs for tensor and vector harmonics on the 2-sphere (with D. Healy, D. Maslen and P. Kostelec), *J. Computational Physics*, **162**, 2000, pp. 514-535.
- A wreath product group approach to signal and image processing: Part II – convolutions, correlations, and applications (with R. Foote, D. Healy, G. Mirchandani and T. Olson), *IEEE Trans. in Signal Processing*, **48**(3), 2000, pp. 749-767.
- A wreath product group approach to signal and image processing: Part I – Multiresolution Analysis, (with R. Foote, D. Healy, G. Mirchandani and T. Olson), *IEEE Trans. in Signal Processing*. **48**(1), 2000, pp. 102-132.
- Deciding finiteness for matrix groups over function fields (w/R. Beals and K. S. Tan), *Israel J. Math.* **109**, 1999, pp. 93-116.
- A Combinatorial Description of the Spectrum of the Tsetlin Library and its Generalization to Hyperplane Arrangements (with P. Bidigare, P. Hanlon), *Duke J. Math.*, **99**(1), 1999, pp. 135-174.
- Level spacings for Cayley graphs (with J. Lafferty). in *Emerging Applications of Number Theory*, D. Hejhal (ed.), Institute for Mathematics and its Applications, Volume 109, 1999, pp. 373-386.
- The *-product in kneading theory (with K. Brucks, R. Galeeva, P. Mumbre, and C. Tresser), *Fundamenta Math.* Vol. 152, 1997, pp. 189-209.
- Fast discrete polynomial transform with applications to data analysis on distance transitive graphs, (with J. Driscoll and D. Healy), *SIAM J. Comput.*, **26**, 1997, pp. 1066-1099.
- Spectral Techniques for Expander Codes, (with J. Lafferty) *1997 Symposium on the Theory of Computing*, pp. 160-167.
- Fast Fourier transforms for wreath products. *J. Applied and Computational Harmonic Analysis*, **2** (1995) 279-292.
- Adapted diameters and the efficient computation of Fourier transforms on finite groups (with D. Maslen), *Proceedings of 1995 ACM-SIAM Symposium on Discrete Algorithms*, pp. 253-262.
- A note on the order of finite subgroups of $GL(n, \mathbf{Z})$ (with K.-S. Tan), *Archiv Math.*, **64** (1995) 283-288.
- Fast Fourier inversion for finite groups. *J. of Assoc. of Comp. Mach.*, **41**(1) (1994) 31-66.
- Efficient computation of isotypic projections for the symmetric group (with P. Diaconis). *DIMACS Series in Discrete Math.*, **11** (1993), 87-104.
- Deciding finiteness of matrix groups in deterministic polynomial time (with L. Babai and R. Beals). *Proc. of 1993 ISSAC*, 117-126.
- Symmetry stabilization for fast discrete monomial transforms and polynomial evaluation. (with S. Moore and D. Healy). *Lin. Alg. and Appl.*, **192** (1993) 249-299.

- Numerical investigation of the spectrum for certain families of Cayley graphs (with J. Lafferty). *DIMACS Series in Discrete Math. and Theor. Comp. Sci.*, **10** (1993), 63-73.
- Fast Fourier analysis for SL_2 over a finite field and related numerical experiments. (with J. Lafferty) *J. of Experimental Mathematics*, **1** (1992) No. 2, 116-139.
- Renormalization for the n -torus. (with V. Baladi, N. Tongring, and C. Tresser). *Nonlinearity*, **5** (1992), 1111-1136.
- Computation of L -series for elliptic curves over function fields, (with K.-S. Tan), *Crelle's Jour.*, **424** (1992), 107-135.
- Even n -colorings of the integers, flows on the n -torus, continued fractions and renormalization. (with R. Siegel, N. Tongring, and C. Tresser) *Chaos*, **1** (1991), 25-30.
- Efficient computation of Fourier transforms on finite groups, (with P. Diaconis), *Journal of the American Mathematical Society*, **3** (1990), 297-332.
- Fast Fourier analysis for abelian group extensions, *Adv. in Appl. Math.* **11**, (1990), 164-204.
- Computation of Fourier transforms on the symmetric group, *Proceedings of 1989 Conference on Computers and Mathematics*, Springer-Verlag, NY, 1989, 156-165.

BOOK CHAPTERS/EDITED VOLUME

- “Writing in the Sciences,” *The Power of Writing*, University Press of New England, Editors Christiane Donahue and Kelly Blewett, 2015, pp. 3134.

CONFERENCE PROCEEDINGS ARTICLES

- Wikipedia Verification Check: A Chrome Browser Extension (w. R. Harder, M. Evans, A. Velasco, C. An), Proceedings of WWW17, to appear, June 2017.
- Predicting Phone Usage Behaviors with Sensory Data using a Hierarchical Generative Model (w.C. An), MLSDA (Machine Learning for Sensory Data Analysis Workshop), in conjunction with PAKDD 2016
- Improving Local Search with Open Geographic Data (w.C. An), OD4LS (Open Data for Local Search Workshop), in conjunction with WWW2016 conference
- The Intrafirm Complexity of Systemically Important Financial Institutions (w. D. Farmer, N. Foti, and R. Lumsdaine), 2015 Amsterdam SYRTO Conference on Systemic Risk.
- Multi-task metric learning on network data (w. C. Fang), PAKDD 2015.
- Sparse coding for key node selection over networks, (w. Y. Xu), in Discovery Science Lecture Notes in Computer Science Volume 8777, 2014, pp. 337-349.
- Non-stationary noise estimation using dictionary learning and Gaussian mixture models (w. James M. Hughes and Yang Wang), in Image Processing: Algorithms and Systems XII, Karen O. Egiazarian; Sos S. Agaian; Atanas P. Gotchev, Editors, Proceedings of SPIE Vol. 9019 (SPIE, Bellingham, WA 2014), 90190L.
- Hyperlink Prediction in Hypernetworks Using Latent Social Features (w.Y. Xu and A. Kleinbaum). In the International Conference on Discovery Science (DS 2013).
- Unbiased Metric Learning: On the Utilization of Multiple Datasets and Web Images for Softening Bias (w. C. Fang and Y. Xu), The IEEE International Conference on Computer Vision (ICCV), 2013, pp. 1657-1664
- A unifying representation for a class of dependent random measures (w. N. Foti, J. Futoma, and S. Williamson), AISTATS 2013, honored as a noted paper

- Feature selection for link prediction (w. Y. Xu), in Proceedings PIKM '12 Proceedings of the 5th Ph.D. workshop on Information and knowledge Pages 25-32
- Comparing higher-order spatial statistics and perceptual judgements in the stylometric analysis of art, (w/J. M. Hughes, D. J. Graham, and C. Robert Jacobsen) Proc. of the European Signal Processing Conference, 2011.
- Using Hierarchical Change Mining to Manage Network Security Policy Evolution (w/G. Weaver, N. Foti, S. Bratus, and S. Smith), The Workshop on Hot Topics in Management of Internet, Cloud, and Enterprise Networks and Services (Hot-ICE '11), (2011), in press.
- Preference for artwork: Similarity, statistics, and selling price (w. D. Graham, J. Friedenber, and C. McCandless), in Proc. SPIE: Human Vision and Electronic Imaging 7527, (2010).
- Stylometrics of artwork: Uses and limitations (w./D. Graham and J. M. Hughes), Proc. SPIE: Computer Vision and Image Analysis of Art 7531, (2010).
- Spectral analysis for phylogenetic trees (w./P. Rinker), *NIPS (2009)*, Workshop on Ranked Data.
- Intensity statistics of artwork: connections to human visual perception (w./ D. J. Graham, J. N. Friedenber, and D. J. Field), SPIE, 2009. Proc. SPIE. 7240.
- Multifractal analysis for Jackson Pollock (w./J. Coddington, J. Elton, and Y. Wang), SPIE 2008, Paper 6810-13.
- A Fast Hermite Transform with Applications to Protein Structure Determination (w./G. Leibon and G. Chirikjian), Proceedings of 2007 International Workshop on Symbolic-Numeric Computation, ACM, 117–124 (2007).
- Stochastic Analysis of Geometric Image Processing Using B-Splines, (w./ G. Rohde, D. Healy, C. Bernstein, A. Aldroubi), Proceedings of 2006 IEEE International Conference on Acoustics, Speech, and Signal Processing, pp. 1017-1020, 2006.
- “Wavelet Analysis for Authentication,” (w./S. Lyu and H. Farid), Art+Math = X, Conference on the interface of Art and Mathematics, CU, Boulder, June 2005
- Description of an interactive, sound making online computer music tutorial web book, International Conference Music and Computers 2002 Short Paper/Demo, Voices of Nature Conference, Goeborg (w./P. Burk, L. Polansky, d. repetto, M. Roberts)
- Recent Progress and Applications of Group FFTs, *36th Asilomar Conference on Signals and Systems*, IEEE Publications, January, 2003.
- Lesion Size Estimation Using Warped Registration of Interval Images, (w./J.B. Weaver, S. Periaswamy, H. Farid, D.N. Rockmore, C.J. Kasales, W. Black, D.M. Healy, Jr.), Proceedings of the Society of Magnetic Resonance, Glasgow, UK, April, 2001, p. 795
- A National Data Center for the Storage and Retrieval of Neuroimaging Data (w./J. Aslam, D. Rus, P. Kostelec, J. Grethe, R. Fendrich, S. Grafton, and M. Gazzaniga. *Society for Neuroscience Abstracts*, 26(2):2235, 2000
- Codes and iterative decoding on algebraic expander graphs (w./J. Lafferty) to be presented at ISITA 2000.
- Differential Affine Motion Estimation for Medical Image Registration (w./S. Periaswamy, J. Weaver, D. Healy, P. Kostelec and H. Farid), presented at SPIE 2000, August 2000.
- A rhomboidal local cosine transform (w./D. Healy and D. Warner), presented at SPIE 2000, August 2000.
- Wreath Product Cyclic Group-Based Convolution: A New Class of Noncommutative Filters (w/G. Mirchandani, R. Foote, D. Healy and T. Olson) to be presented at ICASSP 2000, Istanbul, Turkey.
- A Smooth Non-Rectangular Time-Frequency Segmentation of $L^2(R^2)$ Int. Conf. on Image Processing '97 (w/D. Warner and D. Healy)

Spectral Techniques for Expander Codes and Generalized Cyclic Codes (with J. Lafferty) in ISIT 97

An FFT for the 2-sphere and applications (w/ D. Healy and S. Moore), in ICASSP 96

Wreath Products for Image Processing (w/D. Healy and T. Olson) in ICASSP 96

An FFT for the 2-sphere and imaging applications (with D. Healy and S. Moore) in IMDSP96

EXPOSITORY WORKS

There's a Clear Difference Between Robot-Generated and Human-Generated Art (w. A. Riddell), Slate, 7/1/2016,

Is it Time for a Presidential Technoethics Commission? The Conversation, 5/12/2016, <https://theconversation.com/is-it-time-for-a-presidential-technoethics-commission-58846>

Looking for Art in Artificial Intelligence (w. M. Casey), The Conversation, 5/2/2016, <https://theconversation.com/looking-for-art-in-artificial-intelligence-5633>

Huffington Post

- We Must All be the Lorax - 1/29/17
- The Right to Pursue Happiness is the Right to Pursue Education - 1/23/17
- Playing Games with our Future and Our Lives - 12/25/16
- Encoding a Next Generation 12/12/16
- A Crisis for Critical Thinking 11/30/16 Artful Geometry 1/11/16
- Math is Art is Math is Art is 12/21/15
- Information Wants to be Free, But That Doesn't Make it Easy 11/17/15
- Storytelling Our Way Into Science 10/13/15
- Imagination and the Imagined 9/22/15
- Self-Evident, But Not Simple 9/12/15
- Working out the Math 8/28/15
- Making Marks with Math 8/5/15
- From Marzipan to Mathematics 8/3/15
- A New Age of Exploration, Powered by Math 7/28/15
- Searching But Wanting to Explore 7/17/15
- A Curious Incident 5/14/15
- Our Mother the Machine 5/13/15
- Too Big to Search 5/5/15

Never Mind Turing Tests, What About Terminator Tests? (W. D. Krakauer), Chronicle Review, August 10, 2015.

"What's Missing from the Imitation Game," The New Yorker, Elements Blog, The New Yorker, Elements Blog, November 6, 2014

"The Digital Life of Salman Rushdie," The New Yorker, Elements Blog, The New Yorker, Elements Blog, July 31, 2014

"The Case for Banning the Laptops in the Classroom," The New Yorker, Elements Blog, June 6, 2014.

"Inflation in the Academy," The Huffington Post, June 6, 2014.

"How BASIC Opened up Computers to All," Wall Street Journal, May 19, 2014.

“Our Liberal Arts Moment,” (w. A. Randolph), The Huffington Post, February 25, 2014.

“Whither the University,” (w.D. Krakauer), The Huffington Post, April 17, 2012.

Invited Foreword to the second edition of *Who is Fourier?: A Mathematical Adventure*

To Complexity and Beyond! Review of Complexity a Guided Tour, *Notices of the AMS*, April 2011. (Book review)

The Complexity of Conflict, The Santa Fe Institute Bulletin, vol. 25, pp. 2833.

To Complexity and Beyond! – A Book Review,” *Notices of the AMS*, vol. 58, no. 4, April 2011, 585–587.

“The Complexity of Conflict,” Santa Fe Institute Bulletin, to appear.

“The Six Degrees of Finance,” Santa Fe Institute Bulletin, 2009.

“Economics and Markets as Complex Systems,” Santa Fe Institute Bulletin, vol. 23, No. 1, Spring 2008, pp. 44–49.

“A Paradoxical Subject”: Review of *Mathematics and Common Sense: A Case of Creative Tension* by Philip J. Davis, *American Scientist*, November-December 2007, pages 540-541.

“Stylometry!,” Santa Fe Institute Bulletin, Winter 2006, pp. 10-17.

“A style of number for a number of styles,” *Chronicle of Higher Education*, June 9, 2006.

“Cancer as a Complex System,” Santa Fe Institute Bulletin, Spring 2005, vol. 20, No. 1, pp. 18-21.

“From Buzz to Action: SFI in the media,” Santa Fe Institute Bulletin, Special 20th Anniversary Edition, Fall, 2004, vol, 19, No. 2, pp. 4-5

“The Holy Grail of Complexity Science,” Santa Fe Institute Bulletin, Special 20th Anniversary Edition, Fall, 2004, vol, 19, No. 2, pp. 11-13

“Cancer’s Complex Nature,” Santa Fe Institute Bulletin, Special 20th Anniversary Edition, Fall, 2004, vol, 19, No. 2, pp. 28-29

“Jilted by Sweden, Feted by Norway, Mathematics Finally Gets Its Due”, *Chronicle of Higher Education*, April 9, 2004.

“Are you my Mother...Tongue?” Santa Fe Institute Bulletin, vol. 19, No. 1, Winter, 2004, pp. 10-15.

“Seeing the Stars in Math”, *Connect Magazine*, Volume 16 Issue 3, January/February, 2003.

“So You Think You Want to be in Pictures?”, *Math FORUM*, Mathematical Association of America, February, 2003. (Also, MAA Online, February 2003).

“Exploiting a Beautiful Mind”, *Chronicle of Higher Education*, January 25, 2002.

“Proving Your Life” - a review of “Proof” for the St. Louis Repertory Theatre Playbill

“Square This!”, *Dallas Morning News*, To appear.

“Halving your Cake”, *Dallas Morning News*, July 1, 2001.

“Data are most useful when shared”, *Chronicle of Higher Education*, March 16, 2001 (with M. Gazzaniga)

The FFT – an algorithm the whole family can use, invited for IEEE/AIP Computing in Science & Engineering, special “Top 10 Algorithms of the Last 100 Years”, January 2000.

“Homework”, “The whole is the sum of its parts”, “Objects, arrows and rectangles”, in *Visual Proof: The Experience of Mathematics in Art*, ed. D. Wallace, Dartmouth College, Hanover, NH, to appear.

“The Chance Lectures” (with J. L. Snell), Video-CD.

“Count on Numbers to Always be there”, The Boston Globe, August 8, 2000.

“The Logic of Love”, Dallas Morning News, July 7, 2000.

“Uncertainty is Certain in Mathematics and Life”, Chronicle of Higher Education, June 23, 2000.

“In Painting or Math, Practice Precedes Art”, Dallas Morning News, July 20, 1999.

“The Nines Have It”, Dallas Morning News, September 9, 1999.

“The Exotic, Sensual, Paradoxical Pi”, Chronicle of Higher Education, March 12, 1999.

Book Review: On K.C. Cole’s “The Universe and the Teacup”, *A.M.S. Notices*, March 1999.

“To Teach, Per Chance, to Dream”, a discussion of the Chance Project, with J. L. Snell, *A.M.S. Notices*, September, 1999.

“Mathematical Metaphors Abound in Art and Fiction”, New York Times, Science Times Essay, September 1, 1998.

Radio Essayist, National Public Radio, Sounds Like Science, “Happy Pi Day”, (March 14, 1999), “Mathematical Models”, (April 24, 1999) “Math’s a Beach” (June 26, 1999)

Vermont Public Radio Commentator (Radio Essayist on Mathematics) “Math in the Movies” (October 13, 1998), “What Does a Mathematician Do?” (October 28, 1998), “A Slice of Pi” (November 17, 1998), “Fuzzy Thinking” (January 20, 1999), “Pleasantville” (March 18, 1999). “Mathematical Models” (June 16, 1999) “Mathematical Monkeys” (May 26, 1999), “Math’s a Beach” (July 21, 1999), “The Rare Beauty of Nine” (9 Sep, 1999), “My Computer Ate My Homework” (22 Sep, 1999), “Mathvertising” (6 Oct, 1999), “Name that Function” (3 Nov, 1999), “Jackson Pollock” (1 Dec, 1999), “Millennial Thoughts” (December 23, 1999), “The Geometry of Life” (January 2000), “A Dog Named Moe” (March 29, 2000) “Getting lost to get found” (4 May, 2000) “The Logic of Love” (5 July, 2000) “Can you hear the shape of your date?” (19 July, 2000) “In Search of New Numbers” (11 Nov, 2000), “Many Men, No Votes” (7 Feb, 2001), “Halving Your Cake” (16 April, 2001), “Wrestling with the Squared Circle” (24 May, 2001), “Six Hugs Away” (2 Oct, 2001), “Four degrees of Kelvin” (11 Oct, 2001), “New York Zeros” (26 Jun, 2002), “Math at the movies” (25 Jul, 2002), “Science Heroes and ‘QED’” (10 Jul, 2002) “Little Things” (March, 2004) “Married Math” (April, 2004) “Math Superheros” (June, 2005) “Bursting at the Seams” (June 2005) “Friday the 13th” (June, 2008) “Math Superheros” (June, 2008) “How Much Difference a Bit Can Make” (July, 2008) “Elevenses” (11/11/11) “Happy Pi Day” (3/14/2012) “The Lorax”, Feb 28, 2017

TECHNICAL REPORTS, IN PROGRESS

Analysis of the U.S. Patient Referral Network (w./C. An and A. J. O’Malley), 2017.

The Intrafirm complexity of systemically important financial institutions (w.R. Lumsdaine, N. Foti, G. Leibon, and J. D. Farmer), <http://arxiv.org/abs/1505.02305> and <http://ssrn.com/abstract=2604166>.

A Random Dot Product Model for Weighted Networks (w. D. Deford), <https://arxiv.org/abs/1611.02530>

The Growing Distinctiveness of the U.S. Supreme Court (w. M. Livermore and A. Riddell), preliminary version at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2553279

Agenda Formation and the U.S. Supreme Court: A Topic Model Approach (w. M. Livermore and A. Riddell), preliminary version at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2740126

Robustness and contagion in the international financial network (w./T. Dette and S. Pauls), in preparation.

“FFTs on the Rotation Group” (w./P. Kostelec), Santa Fe Institute Working Papers Series Paper 03-11-060, 200.

“A simple computational method for the identification of disease-associated loci in complex pedigrees” (w./M. Pollak and G. Leibon), arXiv:0710.5625.

Ruffles and the turning point algebra (with P. Doyle), number to be assigned.

The windowed correlation: minimizing the adverse effects of the windowing function (with S. Periaswamy, P. Kostelec, J. Weaver and D. Healy), Department of Mathematics, Dartmouth College, April 2000. TR00-196

Landscapes on spaces of trees (with O. Bastert, P. Stadler, and G. Tinhofer), Santa Fe Institute Technical Report SFI 01-01-006.

Two-dimensional wreath product group-based signal processing (with R. Foote and G. Mirchandani) number to be assigned.

The windowed correlation: minimizing the adverse effects of the windowing function (with S. Periaswamy, P. Kostelec, J. Weaver and D. Healy), Department of Mathematics, Dartmouth College, April 2000. TR00-195

Computing with the finite Fourier transform is mathematics! Department of Mathematics, PMA-TR00-194, Department of Mathematics, Dartmouth College, February 2000

Fast Fourier transforms for fitness landscapes (with W. Hordijk, P. Kostelec, and P. Stadler) Santa Fe Institute, SFI-99-10-068.

FFTs for tensor and vector harmonics on the 2-sphere (with D. Healy, D. Maslen and P. Kostelec) Department of Mathematics, Dartmouth College PMA-TR99-192.

Nonlinear approximation theory on finite groups (with K.-L. Kueh, T. Olson, and K.-S. Tan) Department of Mathematics, Dartmouth College PMA-TR99-191.

FFTs for the 2-Sphere – Improvements and Variations (w/D. Healy and S. Moore) Department of Computer Science, Dartmouth College PCS-TR96-292. (May, 1996)

Efficiency and Stability Issues in the Numerical Computation of Fourier Transforms and Convolutions on the 2-Sphere (w/D. Healy and S. Moore) Department of Computer Science, Dartmouth College PCS-TR94-227. (May, 1994)

SOFTWARE

See “Fast Fourier Analysis on Groups” webpage for software for computing FFTs on different groups.

NSF PANELS

NSF MSBS Panel (2004)

NSF CAREER Mentor Panel (2003)

NSF CAREER Panel (2002)

NSF Computation in ANTC Panel (Fall 2002)

NSF Discrete Math and Combinatorics Panel (1999)

NSF MSRI Committee of Visitors (1998)

NSF DMS Committee of Visitors (1998)

NSF-DARPA Optimizing Portable Applications Libraries (Fall 1996)

NSF-DARPA Massive Data Sets Initiative (Fall 1996)

LECTURE SERIES

MSRI, "Modern Signal Processing" (w. D. Healy), Summer 2001.

CONFERENCES/WORKSHOPS ORGANIZED

Toward a New World of Information Processing, DARPA, January, 2006.

Chance Lectures in Statistics (w. L. Snell), at Dartmouth, December 1997, 1998, 2000 (produced CD w. B. Drake)

Mind/Brain Symposium in Cognitive Neuroscience (w. M. Gazzaniga), at Dartmouth, February, 1999.

Mind Symposia (w/M. Gazzaniga) at Dartmouth, monthly, 1999-00, 2000-01.

SOME RECENT TALKS

Martha Davenport Heard Lecturer, Wellesley College, October, 2014.

Midwest Meeting on Imaging and Surfaces, Invited Speaker, MSU, April, 2009

"Evolution, Complexity, and the Law," Santa Fe Institute Workshop, invited participant and speaker, March, 2009.

2009, AMS/MAA Joint Meetings, Invited Lecture, January 2009

I. E. Block Community Lecture, Annual SIAM Meeting, July, 2008

February Fourier Talks, University of Maryland, February, 2008

A Multifractal Analysis of Jackson Pollock, SPIE, San Jose, January 27, 2008.

Chief of Naval Operations Strategic Studies Group, Naval War College, Newport, RI, November 27, 2007

Museum of Modern Art, NYC, November 8, 2007

Dutchess Community College 50th Anniversary, October 25, 2007

SFI Risk Forum, NYC, October 18, 2007

Distinguished Lecturer, Purdue University Fort Wayne, October 15, 2007

American Political Science Association, August 30, 2007

Santa Fe Institute, Public Lecture, June 17, 2007

Middlebury College Colloquium, FFT, May 2, 2007

Princeton University, Computational and Applied Mathematics Colloquium, April 2007

Swarthmore College, Sigma Xi, FFT, April, 2007

Stylometry, 2007 AAAS Annual Meeting, San Francisco, January 2007

SUNY New Paltz, Science and Engineering Colloquium Series, Artful Mathematics, November, 2006

Johns Hopkins University, Applied Math Colloquium, FFTs for Inverse Semigroups, November, 2006

Santa Fe Institute Business Network, "From Mind to Machine," November, 2006

Indiana University, "FFT's - an algorithm the whole family can use," April, 2006

Indiana University, "Artful Mathematics," Spring 2006.

Hood Museum, Symposium "Who Really Wielded the Paintbrush?" March, 2006

Aberdeen Proving Ground, "Stalking the Riemann Hypothesis", Sigma Xi Lecture, March, 2006

Weisman Art Museum, Minneapolis, Minnesota, "Mathematics: Maker and Muse for Modern Art," February, 2006.

University of Minnesota, "Math Matters" series, invited lecture, "Artful Mathematics," February, 2006

Christie's Auction House, "Digital Techniques in Authentication," November, 2005

"Signal Classification for Primate Communication," Encoding/Decoding Workshop, Santa Fe Institute, June 2005.

"Wavelet Analysis for Authentication," Art+Math = X, Conference on the interface of Art and Mathematics, CU, Boulder, June 2005

Digital Art Authentication, at "To be or not to be a connoisseur?, Symposium in Honor of Hans Vlieghe," U. Leuven, Belgium, May 2005

"Digital Techniques for Artistic Style," NYU Applied Math Colloquium, May 2005

University of North Carolina, Greensboro, Sigma Xi Lecture, "Artful Mathematics - The Quantification of Style," April 2005

"Digital Techniques for Art Authentication," Santa Fe Institute, March, 2005

"Digital Techniques for Art Authentication," New York Metropolitan Museum of Art, February, 2005

"Digital Techniques for Art Authentication," Williamstown Conservation Center, January, 2005

Prosser Lectures, "The Art of Mathematics: The Quantification of Style", November, 2004

'Allegheny College Mathematics Lectures for Undergraduates (series): "Stalking the Riemann Hypothesis", "The Art of Mathematics", "The Math Life", October, 2004.

"Digital Techniques for Art Authentication," , Vanderbilt, May, 2004

"Chaos," Bridgewater Associates, March, 2004.

"FFTs on the Rotation Group," Tufts University, November, 2003.

"Quantum Chaos," , UC Davis, Spring, 2003.

"Fast Fourier Transforms on Groups", Institute for Advanced Study, December, 2002.

"Quantum Chaos and $SL(2,p)$ ", Institute for Advanced Study, December, 2002.

"Databases in the Life Sciences", Santa Fe Insitute, May, 2002.

"Group FFTs", AFOSR Signal Processing meeting on Burlington Vermont, June 2002.

"Recent Progress on Group FFTs", 36th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, November 2002.

"FFTs on Groups", two-part lecture series at New York University (October, 2001)

"Data-mining and Network Analysis in the Life and Social Sciences", Institute for Defense Analyses, December 2001

"The Way of Math" - video documentary presentation at the Institute for Defense Analyses, December 2001

Panel participant, presentation of clip from "The Math Life" video documentary at American Math Society meeting, San Diego, January 2002

University of Michigan Departmental Colloquium, February 2002

Statistics Colloquium (U. Vermont, March 2000)
 Defense Sciences Study Group (IDA, January 2000)
 Algebra Seminar (Yale Univ., December 1999)
 Visual Proof/Art and Mathematics (Dartmouth College, October, 1999)
 International Conference on Number Theory and Its Applications, National Central University, Taiwan
 (Invited Lecture, October 1999)
 Conference on harmonic analysis and applications, U. Maryland (October 1999).
 Image Processing, multiresolution analysis and statistics, Georgia Tech (Invited Lecture, September 1999)
 NSF-RI Meeting in Computer Science, Las Cruces, NM (August 1999)
 IMACS-ACA Invited Lecture, Madrid (June 1999).
 MIT, Applied Math Colloquium, (May, 1999).
 Princeton University, Analysis seminar, (April, 1999).
 Cornell University, Department of Mathematics Colloquium, (February, 1999).
 Columbia University, Department of Mathematics Colloquium, (January, 1999).
 Yale University, Discrete Math Colloquium, (December 1998.)
 Mathematics Colloquium, U. Mass., Amherst (December 1998)
 Discrete Mathematics Colloquium, Yale (December 1998)
 Celera Corp. (November, '98)
 NYU, Applied Math Colloquium (October, '98)
 DIMACS Workshop in Astrophysics and Algorithms: Massive Astronomical Data Sets (May 1998, Princeton)
 Combinatorics of New England (May '98)
 DIMACS Workshop in Discrete Mathematical Chemistry (March 1998, Rutgers)
 Spectral Methods in Medical Signal Processing, Munich (Invited Lecture, February. '98)
 Colloquium Speaker, National Taiwan University (January, '98)
 Taipei Academia Sinica, Center for Theoretical Studies Conference on Number Theory (Invited Lecture, January '98)
 Bios Group, Technical presentation on group theory and data analysis
 Colloquium speaker, Department of Mathematics, University of Vermont (October '97)
 SIAM Parallel Processing (March 1997) - Invited Minisymposium Presentation

MENTORING

Daryl Deford, Ph.D. (Math, Year 3)
 Keith Carlson, Ph.D. (CS, Year 4)
 Chuankai An, Ph.D. (CS, Year 3)

Sarah Wolff, Ph.D., (Math), Asst. Prof. Denison University
 Chen Fang, Ph. D., (CS), Adobe Research
 Ye Xu, Ph. D. (CS), LinkedIn
 James M. Hughes, Ph.D. (CS), LGS Innovations
 Nick Foti, Ph.D. (CS), Postdoctoral Fellow, Dept. of Statistics, U. Washington
 Paige Rinker, Ph. D. '10 (Asst. Prof., Math, John Carroll University)
 Giulio Genovese, Ph.D. Ph. D. (Math) '10 (Broad Institute, Research Scientist,)
 Dan Graham (Postdoctoral Fellow, Math), 2008-2010 (Asst. Prof., Psychology, Hobart and William Smith College)
 Martin Malandro, Ph.D. (Math), '08, (Asst. Prof., Math, Sam Houston State College)
 Robert Savell, Ph. D. (Computer Science), '05, (self-employed)
 Michael Orrison, Ph. D. (Math), '01 (Associate Prof., Math, Harvey Mudd)
 Peter Kostelec (Postdoctoral Fellow, Math), (Research Fellow, Lincoln Labs)
 Robert Taintor, '07-'08, Presidential Scholar, "Fast Hermite Transforms"
 Alyssa Anderson, '07, (Senior Thesis, Math), "Financial Networks"
 Dan Becker '00 (Senior Thesis, CS) "Spectral analysis for voting data"
 Eric Greenberg '00 (Senior Thesis, CS) "Auroral Absorption", High Honors
 Karolyn Abram '00 (Presidential Scholar, Senior Thesis, CS) "Medical registration", High Honors
 Shayna Rich '99 (Senior Thesis, Math) "Quantum Field Theory", Honors
 Douglas Warner (co-Ph.D. adviser Math. w/D. Healy - now at Vexcel Corp.)
 Kevin Coopman (Senior Thesis - applying to Appl. Math. grad. school) Honors
 Vikram Srimurthy, '95 (Senior Thesis, Math) "Computation in the Turning Point Algebra", Honors
 Todd Whitman (Senior Thesis - UMN math grad. school)

COURSES TAUGHT

Undergraduate: Information Theory, Basic Probability, Mathematical Statistics, Honors Probability, Calculus, Groups and Symmetry, Applied Algebra, Calculus, Calculus for Physics and Chemistry, Music and Computers, Discrete Mathematics in Computer Science, Mathematics in the Social Sciences, Introduction to Fourier Analysis, Algebra

Graduate: Algebra I, Algebra II, Expander Graphs, Topics in Combinatorics, Image Processing, Numerical Analysis, Topics in Applied Math