

TIMOTHY P. CHARTIER

Curriculum Vitae

Contact information:

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Education

Ph.D., Applied Mathematics, University of Colorado at Boulder, 2001.

M.S., Computational Mathematics, Western Michigan University, 1996.

B.S. (summa cum laude), Applied Mathematics, Western Michigan University, 1993.

Academic Positions

Associate Professor, Department of Mathematics, Davidson College, 2009 – present.

Assistant Professor, Department of Mathematics, Davidson College, 2003 – 2009.

Acting Assistant Professor, Department of Mathematics, University of Washington, 2001 – 2003.

Research Assistant for Stephen McCormick, University of Colorado at Boulder, 1997 – 2001.

Authorized Sun Microsystems' Java Academic Faculty, University of Colorado at Boulder, May 2000.

Teaching Assistant, University of Colorado at Boulder, 1996 – 1997.

Graduate Assistant and Teaching Assistant Mentor, Western Michigan University, 1995 – 1996.

Teaching Assistant, Western Michigan University, 1994 – 1995.

Awards and Honors

Alfred P. Sloan Research Fellowship. September 16, 2008 – September 15, 2010.

2007 Henry L. Alder Award for Distinguished Teaching by a Beginning College or University Mathematics Faculty Member; Mathematical Association of America.

2011 Section Lecturer for the Southeaster Section of the Mathematical Association of America.

PRIMUS 2007 article *Using the Force: Star Wars in the Classroom* was chosen as exemplary paper and distributed at the Joint Mathematics Meetings in 2011.

2002-2003 AMS Project NExT Fellow; Mathematical Association of America.

Student and New Ph.D. Paper Competition Award for *Spectral AMGe (ρ AMGe)*; 7th Copper Mountain Conference on Iterative Methods, 2002.

Grants and External Support

- Associated Colleges of the South faculty stipend for blended teaching and learning pilot projects. Title: *Exploring Applications of Linear Algebra*. November 2011 - June 2012.
- U.S. Provisional Patent, Application No.61/405,381, T. Chartier and J. L. Trask*, Title: *Ranking Twitter Users with Sports Ranking Methods*. Filed October 21, 2010.
- Arts & Science Council, Cultural Project Grant. Title: *A Mask to Teach Tiling and Constructive Geometry*. September 1, 2010 – January 29, 2011.
- United States Department of Energy, Principal Investigator. Title: *Numerical Methods for Forward and Inverse Problems in Discontinuous Media*. November 1, 2007 – October 31, 2010.
- College of Charleston NSF CAREER. Subcontract 520626-Davidson-Chartier-Lab V. Title: *Mathematical Device Dissection Lab V*. May 1, 2009 – May 15, 2010.
- College of Charleston NSF CAREER. Subcontract 520626-Davidson-Chartier-Lab IV. Title: *Mathematical Device Dissection Lab IV*. May 1, 2009 – December 31, 2009.
- College of Charleston NSF CAREER. Subcontract 520626-Davidson-Chartier-Lab III. Title: *Mathematical Device Dissection Lab III*. July 1, 2007 – January 31, 2008.
- College of Charleston NSF CAREER. Subcontract 520626-Davidson-Chartier-Lab II. Title: *Mathematical Device Dissection Lab II*. July 1, 2007 – January 31, 2008.
- College of Charleston NSF CAREER. Subcontract 520626-Davidson-Chartier-Lab. Title: *Mathematical Device Dissection Lab*. May 1, 2006 – January 31, 2007.
- United States Department of Energy, Co-Investigator. Title: *Numerical Methods for Forward and Inverse Problems in Discontinuous Media*. April 1, 2004 – March 31, 2007. Supplemental Grant. August 15, 2005 – March 31, 2006.
- Arts & Science Council, Special Project Grant. Title: *Mathematically Educating with Masks and Motion*. September 1, 2006 – June 30, 2007.
- Lawrence Livermore National Laboratory. Subcontract for Research and Development of spectral AMGe. May 14 – September 13, 2002.

Publications

* and † denote Davidson College and University of Washington undergraduate coauthor, respectively

Research Publications

1. *Robust and Adaptive Multigrid Methods: comparing structured and algebraic approaches* (with S. MacLachlan and D. Moulton), *Numerical Linear Algebra with Applications*, to appear.
2. *Adaptive Algebraic Smoothers* (with B. Philip), *Journal of Computational and Applied Mathematics*, Available online 6 December 2011, ISSN 0377-0427, 10.1016/j.cam.2011.11.016. (<http://www.sciencedirect.com/science/article/pii/S0377042711005863>)
3. *Sports Ranking with Nonuniform Weighting* (with E. Kreutzer*, A. Langville and K. Pedings), *Journal of Quantitative Analysis in Sports* **7** (2011) 3, Article 6.
4. *Sensitivity and Stability of Ranking Vectors* (with E. Kreutzer*, A. Langville and K. Pedings), *SIAM Journal on Scientific Computing* **33** (2011) 3, 1077–1102..

5. *Minimum violations sports ranking using evolutionary optimization and binary integer linear program approaches* (with E. Kreutzer*, A. Langville, K. Pedings and Y. Yamamoto), in Proceedings of the Tenth Australian Conference on Mathematics and Computers in Sports, A. Bedford and M. Ovens, eds., MathSport ANZIAM (2010) 13–20.
6. *Efficiency of Multigrid Algorithms for Head Models on Electroencephalography Simulations* (with T. Rankin* and C. Ramon), International Journal of Pure and Applied Mathematics **45** (2008) 3, 349–357.
7. *Spectral element agglomerate AMGe* (with R. D. Falgout, V. E. Henson, J. E. Jones, T. A. Manteuffel, S. F. McCormick, J. W. Ruge, and P. S. Vassilevski), in Domain Decomposition Methods in Science and Engineering XVI, 513–521, Lecture Notes in Computational Science and Engineering **55**, Springer, Berlin, 2007.
8. *A Comparison of Algebraic Multigrid and Geometric Immersed Interface Multigrid Methods for Interface Problems* (with L. Adams), SIAM Journal on Scientific Computing **26** (2005) 3, 762–784.
9. *New Geometric Immersed Interface Multigrid Solvers* (with L. Adams), SIAM Journal on Scientific Computing **25** (2004) 5, 1516–1533.
10. *Improving Algebraic Multigrid Efficiency for Immersed Interface Problems* (with M. J. Antonelli[†]), International Journal of Pure and Applied Mathematics **10** (2004) 4, 365–385.
11. *Spectral AMGe (ρ AMGe)* (with R. D. Falgout, V. E. Henson, J. E. Jones, T. A. Manteuffel, S. F. McCormick, J. W. Ruge, and P. S. Vassilevski), SIAM Journal on Scientific Computing **25** (2003) 1, 1–26.

Expository Publications

1. *Google PageRank: The Mathematics of Google* (with E. Aghapour, A. Langville, and K. Pedings), URL: <http://dev.whydomath.org/node/google/index.html>.
2. *A Nonnegative analysis of politics* (with C. Wessell), Math Horizons (April 2011) 10–13.
3. *Alumni Profiles: Math Modeling Makes for an Optimal Career*, Math Horizons (February 2011) 14–15.
4. *Bracketology: How can math help?* (with E. Kreutzer*, A. Langville and K. Pedings), Mathematics and Sports, Volume 43 of Dolciani Mathematical Expositions, Joseph Gallian, ed. Mathematical Association of America (2010) 55–70.
5. *Bending a Soccer Ball with Math*, Mathematics and Sports, Volume 43 of Dolciani Mathematical Expositions, Joseph Gallian, ed. Mathematical Association of America (2010) 219–224.
6. *March Madness to Movies* (with A. Langville and P. Simov*), Math Horizons (April 2010), 16–19.
7. *Envisioning the invisible*, Notices of the AMS **57** (January 2010) 1, 24–28.
8. *A Mathematical Circus*, MAA FOCUS **29** (Dec 2009/Jan 2010) 6, 16–17.
9. *How easy is Easy Java Simulations programming?* (with E. Kreutzer*), Loci **1** (2009).
10. *Google-opoly* (with E. Kreutzer*, A. Langville and K. Pedings), Loci **1** 2009.
11. *Searching for Text in Vector Space* (with N. Dovidio*), The UMAP Journal **29** (2008) 4, 417–430.
12. *Computational Methods of Linear Algebra by Granville Sewell* (Book review), SIAM Review, **50** (December 2008) 4, 808–809.
13. *Google's PageRank and Beyond: The Science of Search Engine Rankings by Amy Langville and Carl Meyer* (Book review), Computing in CiSE & Engineering (November/December 2008), 11–12.
14. *Modeling a Changing World* (with N. Dovidio*), Loci **1** (2008).
15. *A Conversation with Michael Moschen*, Math Horizons (February 2008), 5–6.

16. *Mathematical Penmanship* (with D. Clayton*, M. Navas* and M. Nobles*), Math Horizons (April 2008), 10–11, 31.
17. *Mountains of Fractals*, Journal of Online Mathematics and its Applications **8** (2008).
18. *An Integer Programming Model for the Sudoku Problem* (with A. Bartlett, A. Langville and T. Rankin*), Journal of Online Mathematics and its Applications **8** (2008).
19. *Mathematically Entertained*, MAA FOCUS **27** (March 2007) 3, 18–19.
20. *Bending a Soccer Ball with CFD* (with S. Barber), SIAM News **40** (July/August 2007) 6, 6.
21. *Math Bends it like Beckham*, Math Horizons (February 2007), 2.
22. *Using the Force: Star Wars in the Classroom*, PRIMUS **17** (January 2007) 1, 8–23.
23. *Googling Markov*, The UMAP Journal **27** (2006) 1, 17–30.
24. *Devastating Roundoff Error*, Math Horizons (April 2006), 11.
25. *Traveling Door to Door with a DNA Computer* (with D. Moore[†] and L. Walker[†]), The UMAP Journal **26** (2005) 4, 447–456.
26. *Mathematical Movie Magic* (with D. Goldman), Math Horizons (April 2004), 16–20.

Books

1. *Numerical Methods: Design, Analysis, and Computer Implementation of Algorithms* (with A. Greenbaum), Princeton University Press, to appear.
2. *A Bit and a Byte of Math*, in progress.

Undergraduate Research

Student Researchers

1. Austin Totty ('12), Fall 2011 - Develop numerical integration methods using everyday objects and modernize mathematical paradoxes of Martin Gardner suitable for the secondary classroom.
2. Cyrus Lala ('13), Summer 2011 - Development of iPhone programs related to algorithms developed for popular math book *Bit and a Byte of Math*.
3. Daniel Bernstein ('13), Summer 2011 - Development of visualization tool as a Java application for matrix clustering in biological and medical applications.
4. Greg Newman ('13), Fall 2011 - Clustering of fan fiction documents.
5. Daniel Martin ('11), Spring 2011 – Adapted sports ranking methods into recommendation systems and also served as consultant with me for Tiger Falcon, LCC related to the social gaming website Prediculous.com.
6. Colin Thomson ('13)
 - Summer 2011 - Development of Java applets for Calculus.
 - Summer 2010 - Visualization tools for consensus clustering for biological and medical applications.
7. Lake Trask ('11), Summer 2010, Fall 2010, Spring 2011 - Apply sports ranking methods to Twitter user.
8. Steph Meador ('12)
 - Spring 2010 – Apply sports ranking methods in the context of web page ranking.
 - Spring 2011 – Development of applets using Easy Java Simulation software.
 - Fall 2011 – Development of Java applications related to curriculum unit ideas for Charlotte Teachers Institute

9. Eugene Shiu ('12), Fall 2010 - Develop recommendation system for Twitter.
10. Jennings Boley ('10) and Mark Trawick ('10), Spring 2010, Independent study on clustering financial data.
11. Erich Kreutzer ('10)
 - Fall 2008, Spring 2009 – Applying sports ranking methods to movie ranking from Netflix ratings data.
 - Summer 2009 – Research in ties in ranking methods, application of clustering methods to datasets from Netflix, Facebook, and for public health applications.
 - Summer 2009 – Development of online research network web too, www.RankandCluster.com, created and maintained by Kreutzer.
 - Fall 2009 – Independent study on ranking and clustering methods with an emphasis on their application to recommendation systems.
 - Spring 2010 – Applications of Clustering and Algorithms
12. Nathalia Paulinelli ('10), Fall 2008, Spring 2009 – Implementing and testing algebraic block smoothers within Algebraic Multigrid.
13. Max Win ('10)
 - Fall 2008, Spring 2009 – Studying robustness and efficiency of block smoothers to solve linear system formulation of PageRank.
 - Fall 2009 – Recommendation of movies via Netflix ratings data with cosine similarity measures.
14. Jim Dickson ('09), Summer 2009
 - Analyzed the use of algebraic block smoothing methods as clustering methods and also the use of clustering methods to form algebraic blocks for iterative relaxation.
 - Analyzed the use of a measure of algebraic strength from research in algebraic block smoothers in the context of classical AMG.
15. Steph Meador ('12), Fall 2009 - Apply sports ranking methods in the context of web page ranking.
16. Kathryn Pedings, masters degree student, College of Charleston, Summer 2009 – Sensitivity of ranking methods and development of math module on evolutionary ranking method. Summer 2009.
17. Daniel Orr ('08)
 - Summer 2008 – Performed algorithm development of adaptive BoxMG for LANL.
 - Summers 2006, 2007, 2008 – Analyzed preconditioning and adaptive multgrid via subcycling.
18. Peter Simov ('08), Summer 2008 – Categorized films into clusters and rank within such groupings using Netflix ratings data.
19. Anthony Chick, Spring 2008 – Developed Java applets with Easy Java Simulation software to supplement *A Bit and a Byte of Math*.
20. Ben Kovacevich, Spring 2008 – Developed a Java applet for online math module to appear on www.whydomath.org.
21. Timothy Rankin ('07), Fall 2005 – Spring 2007 – Analyzed efficiency of SAMG multigrid package on linear systems from models of the human head.
22. Nicholas Dovidio ('07)
 - Honors in Mathematics, thesis title: *Analysis and Applications of PageRank, HITS, the Vector Space Model, SALSA and Rank Correlation Techniques*.
 - Fall 2006 – Spring 2007 – Began implementation of adaptive multgrid ideas into Los Alamos National Laboratory's (LANL) main multigrid code called BoxMG.

- Summer 2006 – Created Java application on numerical solvers for ODEs.
 - Fall 2005 - Analyzed efficiency measures in AMG and their correlation to run time efficiency.
 - Summer 2005 – Created a user–interface for FOSPACK.
 - Spring 2005, Fall 2004 – Analyzed two multigrid methods as preconditioners via estimation of eigenvalues (via the pseudospectra) of corresponding iteration matrices.
23. Rebecca Steorts ('05), Summer 2005 – Prepared a square matrix (with 1.5 million rows) for SAMG multigrid package.
 24. Bridget Cook ('06)
 - Spring 2005 – Analyzed effectiveness and robustness of efficiency measures of multigrid.
 - Fall 2004 – Applied adaptive smoothed aggregation to FEM model of the human head.
 25. Gavin Taylor ('06), Summer 2004 – Created a user–interface for Lawrence Livermore National Lab's (LLNL) AMG code.
 26. Garrett Monda ('06), Spring 2004 – Analyzed efficiency of LLNL's AMG code on FEM model of the human head.
 27. Miranda Antonelli, Summer 2002 – Spring 2003 – Compared the efficacy of spectral AMGe and spectral element agglomerate AMGe and improved performance of AMG for immersed interface problems. Honor's thesis 2003.
 28. Deborah Moore and Lorne Walker, Spring – Summer 2002 – Developed algorithm that uses DNA interactions to solve the Traveling Salesman Problem.
 29. John Otterson, Winter 2002 – Studied the optimization of computer switching hardware configurations via linear programming and simulation.
 30. Reuben K. Fries, Fall 2001 – Summer 2002 – Implemented D. Bayer and P. Diaconis' mathematical model of card shuffling.

Supervised Publications

1. Lake Trask ('11), 3rd IMA International Conference on Mathematics in Sport, Manchester, England, June 2011. *Sports Ranking and Twitter* (accepted to conference proceedings).
2. Peter Allison ('06), *Fighting Terrorism with Mathematics*, Math Horizons (April 2006) 8–11.
3. Lesley Attkisson ('06), Nicholas Cain ('06), Bridget Cook ('06), Michael Flake ('06) and Martha Shott ('06), *Math Murder Mysteries*, <http://www.davidson.edu/math/chartier/Mmm/>. Covered in *Math Horizons* in February 2007 issue on page 43.
4. Martha Shott ('06), *Super Size Me: An Optimization Problem*, The UMAP Journal, in revision.

Supervised Talks and Posters

1. Lake Trask ('11), Joint Mathematics Meetings, New Orleans, Louisiana, January 2011. *Sports Ranking and Twitter* (poster).
2. Colin Thomson ('13), Joint Mathematics Meetings, New Orleans, Louisiana, January 2011. *New Patterns with a Paradigm Shift in Data Clustering* (poster).
3. Jennings Boley ('10) MAA Southeastern Section Meeting, Elon, North Carolina, March 2010. *Finding Meaning in Friendships*.
4. Mark Trawick ('10) MAA Southeastern Section Meeting, Elon, North Carolina, March 2010. *Clustering with Pluto*.
5. Colin Thomson ('13) MAA Southeastern Section Meeting, Elon, North Carolina, March 2010. *How Big is a Big Game? Finding the best weights to predict the March Madness Tournament*.

6. Steph Meador ('12) Francis Marion Undergraduate Mathematics Conference, Florence, South Carolina, April 2010. *Adapting sports ranking to the web.*
7. Erich Kreutzer ('10)
 - Joint Mathematics Meetings, San Francisco, California, January 2010. *Movie Recommendation Systems.*
 - SIAM Southeastern-Atlantic Section Conference, Raleigh, North Carolina, March 2010. *When a win is not a win - Inducing Ties in Sports Ranking* (invited lecture).
 - South Eastern Atlantic Mathematical Sciences Workshop, Orlando, Florida, November 2009. *Ties and Sports Ranking* (invited lecture).
 - Southeastern Ranking and Clustering Workshop, Charleston, South Carolina, August 2009. *Handling Ties in Ranking Methods.*
 - Southeastern Ranking and Clustering Workshop, Charleston, South Carolina, August 2009. *Introduction to RankandCluster.com.*
 - Joint Mathematics Meetings, Washington D.C., January 2009. *How fair are BCS ratings? Analysis of Colley Methods for Sports Ranking.*
 - South Eastern Atlantic Mathematical Sciences Workshop, Chapel Hill, North Carolina, November 2008. *When Movies Compete* (poster).
 - Shenandoah Undergraduate Mathematics and Statistics Conference, Harrisonburg, Virginia, October 2008. *When Movies Compete.*
8. Jim Dickson ('09) Southeastern Ranking and Clustering Workshop, Charleston, South Carolina, August 2009. *Fielder's Method.*
9. Nicholas Dovidio ('07)
 - Joint Mathematics Meetings, New Orleans, Louisiana, January 2007. *A Mathlet to Interactively Explore Ordinary Differential Equation Solvers.*
 - South Eastern Atlantic Mathematical Sciences Workshop, Charleston, South Carolina, September 2006. *Exploration of Ordinary Differential Equation Solver* (poster).
 - MAA Southeastern Section Meeting, Raleigh, North Carolina, March 2005. *Explaining the Effectiveness of Multigrid Preconditioning with Pseudospectra Images.*
 - 2005 Carolina Mathematics Undergraduate Research Conference, Davidson, North Carolina, April 2005. *Explaining the Effectiveness of Multigrid Preconditioning with Pseudospectra Images.*
10. Martha Shott ('06)
 - Regional Undergraduate Mathematics Conference at the University of North Carolina at Greensboro, Greensboro, North Carolina, October 2005. *Super Size Me: An Optimization Problem.*
 - Joint Mathematics Meetings, San Antonio, Texas, January 2006. *Super Size Me: An Optimization Problem.*
11. Gavin Taylor ('06)
 - Joint Mathematics Meetings, San Antonio, Texas, January 2006. *Imagemosaics: Painting with Pictures.*
 - Regional Undergraduate Mathematics Conference at the University of North Carolina at Greensboro, Greensboro, North Carolina, October 2005. *Imagemosaics: Painting with Pictures.*

Presentations

Invited

1. Invited panelist presentation. MathFest, Lexington, Kentucky. August 2011. *Effective group projects.*
2. Project NExT course. MathFest, Lexington, Kentucky. August 2011. *When Life is Linear: Applications of Linear Algebra.*
3. Math for America NYC, Professional Development and Outreach Group, New York, NY. December, 2011. *Dicey Math from Google to computer graphics* (morning session) and *Who's Number 1, at least mathematically?* (afternoon session).
4. Focus on Math lecture series, Brigham Young University, Provo, UT. November 2011. *A Pretty Mathematical Face.*
5. University of Oklahoma, Norman, OK. November 2011. *Sports Ranking – March Madness to Twitter.*
6. Math Club, University of Oklahoma, Norman, OK. November 2011. *A Pretty Mathematical Face.*
7. NC State Society for Undergraduate Mathematics series, North Carolina State University, Raleigh, NC. November 2011. *Putting a Spring in Yoda's Step.*
8. Wake Forest University, Winston-Salem, NC. October 2011. *Putting a Spring in Yoda's Step.*
9. Furman University, Greenville, SC. September 2011. *Putting a Spring in Yoda's Step.*
10. Furman University, Greenville, SC. September 2011. *Analyzing behavior of networks: Google to the World Series.*
11. World View conference *Global Issues and the 21st Century Classroom*, Rutherfordton, NC. August 2011. *Modeling Math – from the streets to the globe.*
12. Denison University, Granville, OH. April 2011. *Math to the Max: sudoku, optimal art and service.*
13. Denison University, Granville, OH. April 2011. *To be discrete in the world - service to madness.*
14. Georgia College & State University, Milledgeville, GA. April 2011. *Sports Ranking – March Madness to Twitter.*
15. Clarkson University, Potsdam, New York. April 2011. *To be or not to be linear.*
16. Clarkson University, Potsdam, New York. April 2011. *Putting a Spring in Yoda's Step.*
17. Keynote speaker, Research Undergraduate Mathematics Conference, Catawba College, Salisbury, North Carolina. March 2011. *March Mathness.*
18. MAA Lecture for Students. Joint Mathematics Meetings, New Orleans, Louisiana. January 2011. *Mime-matics.*
19. Panelist presentation. Joint Mathematics Meetings, New Orleans, Louisiana. January 2011. *When life is linear: research in numerical linear algebra.*
20. University of Colorado, Boulder, CO. October 2010. *Sports Ranking – March Madness to Twitter.*
21. Randolph-Macon College, Ashland, VA. September 2010. *March Mathness.*
22. Joint MAA-Michigan MichMATYC Spring Meeting, Ypsilanti, Michigan. May 2010. *March Mathness.*
23. Kalamazoo College, Kalamazoo, Michigan. May 2010. *A Pretty Mathematical Face.*
24. Iowa State University, Ames, Iowa. April 2010. *Engaging students mathematically - pitch by pitch.*

25. Florida Institute of Technology, Melbourne, Florida. March 2010. *Improving on your Mistakes: solving linear systems iteratively.*
26. MAA Maryland-District of Columbia-Virginia Section Meeting, Baltimore, Maryland. November 2009. *Putting a Spring in Yoda's Step.*
27. 5th Annual Texas Undergraduate Research Conference, Huntsville, Texas. November, 2009. *Putting a Spring in Yoda's Step.*
28. Fall Meeting of the Texas Section Project NExT Fellows, Huntsville, Texas. November 2009. *Engaging Students Mathematically - pitch by pitch.*
29. Joint Math Colloquium and S-STEM Seminar, Appalachian State University, Boone, North Carolina. October 2009. *Improving on your Mistakes: solving linear systems iteratively.*
30. Panelist. Project NExT session on "Reflecting On Our Own Teaching." Project NExT Workshop, Portland, Oregon. August 2009.
31. Panelist. Project NExT session on "The faculty member as teacher and scholar." Project NExT Workshop, Portland, Oregon. August 2009.
32. MathFest, Portland, Oregon. August 2009. *Google Power.*
33. 12th Annual Legacy of R. L. Moore Conference, Austin, Texas. July 2009. *Exploring Mathematical Ideas with Mime.*
34. Faculty and Student talk for the Department Mathematics and Computer Science, Denison University, Granville, Ohio. April 2009. *A pretty mathematical face.*
35. Student Awards Banquet, Western Michigan University, Kalamazoo, Michigan. March 2009. *A pretty mathematical face.*
36. Department of Mathematics Colloquium, Western Michigan University, Kalamazoo, Michigan. March 2009. *Adaptive Block Smoothing.*
37. Department of Mathematics Colloquium, Wake Forest University, Winston-Salem, North Carolina. October 2008. *Improving on your Mistakes: solving linear systems iteratively.*
38. Department of Applied Mathematics Seminar, University of Washington, Seattle, Washington, April, 2008. *Adaptive Block Smoothing.*
39. Department of Mathematics Seminar, Willamette University, Salem, Oregon. April 2008. *Improving on your Mistakes: solving linear systems iteratively.*
40. Math in Action, Grand Valley State University, Allendale, Michigan. February 2008. *Motivating Mathematics with Mime.*
41. Beloit College, Beloit, Wisconsin. October 2007. *Putting a Spring in Yoda's Step.*
42. MathFest, San Jose, California. August 2007. *Engaging students mathematically – pitch by pitch.*
43. Closing address, Shenandoah Undergraduate Mathematics and Statistics Conference, James Madison University, Harrisonburg, Virginia. October 2006. *Putting a Spring in Yoda's Step.*
44. MathFest, Knoxville, Tennessee. August 2006. *Putting a Spring in Yoda's Step.*
45. Western Michigan University, Kalamazoo, Michigan. April 2006. *Putting a Spring in Yoda's Step.*
46. Grand Valley State University, Allendale, Michigan. April 2006. *Putting a Spring in Yoda's Step.*
47. Hope College, Holland, Michigan. April 2006. *Putting a Spring in Yoda's Step.*
48. Joint Mathematics Meetings, San Antonio, Texas. January 2006. *Putting a Spring in Yoda's Step.*
49. Householder Symposium XVI, Seven Springs, Pennsylvania. May 2005. *Adaptive Multigrid Via Subcycling on Complementary Grids.*

50. 7th IMACS International Symposium on Iterative Methods in Scientific Computing, Toronto, Canada. May 2005. *Self-Adaptive Multigrid Via Subcycling*.
51. SIAM Conference on Computational Science & Engineering, Orlando, Florida. February 2005. *Self-Adaptive Multigrid Via Subcycling*.
52. Department of Mathematics Seminar, Randolph–Macon College, Ashland, Virginia. October 2004. *Mathematical Art: the art of raytracing*.
53. Department of Mathematics Seminar, Randolph–Macon College, Ashland, Virginia. November 2003. *Improving on your Mistakes: solving linear systems iteratively*.
54. MathFest, Project NExT Workshop on *Swap Session on Calculus Labs and Projects*, Boulder, Colorado. August 2003. *Using the World Wide Web*.
55. Department of Applied Mathematics Seminar, University of Washington, Seattle, Washington. May, 2003. *Adaptive Multigrid Via Subcycling on Complementary Grids*.
56. MathFest at the University of Washington, Seattle, Washington. March 2003. *Juggling Numbers*.
57. University of Puget Sound, Tacoma, Washington. December 2002. *Improving on your Mistakes: solving linear systems iteratively*.
58. Householder Symposium XV, Peebles, Scotland. June 2002. *Spectral AMGe*.
59. 7th Copper Mountain Conference on Iterative Methods, Copper Mountain, Colorado. April 2002. *Spectral AMGe*.
60. Pacific Northwest Numerical Analysis Seminar, Western Washington University, Bellingham, Washington. September 2001. *Multigrid methods and the search for scalable algorithms for numerical PDE's*.
61. Numerical Analysis Research Club, University of Washington, Seattle, Washington. May 2001. *Spectral AMGe*.
62. Colorado Preparing Future Faculty Network Forum, Boulder, Colorado. February 2000. Facilitator: Practicum in Technology for Future Faculty.

Contributed

1. Joint Mathematics Meetings, New Orleans, Louisiana. January 2011. *A Model for the Community*.
2. Joint Mathematics Meetings, San Francisco, California. January 2010. *Google-opoly*.
3. MathFest, Portland, Oregon. August 2009. *Google Power*.
4. Joint Mathematics Meetings, Washington D.C. January 2009. *Using mime to see the remainder*.
5. Joint Mathematics Meetings, Washington D.C. January 2009. *Six Fibs and Videotape* (with Colm Mulcahy).
6. 10th Copper Mountain Conference on Iterative Methods, Copper Mountain, Colorado. April 2008. *Adaptive Block Smoothing*.
7. 13th Copper Mountain Conference on Multigrid Methods, Copper Mountain, Colorado. March 2007. *Preconditioning with Adaptive Multigrid via Subcycling on Complementary Grids*.
8. Joint Mathematics Meetings, New Orleans, Louisiana. January 2007. *Mathematics in Mime*.
9. Joint Meeting Southeastern Section MAA and SIAM Southeast Atlantic section, Auburn, Alabama. March 2006. *Vectors, Computer Art and Toy Story*.
10. 12th Copper Mountain Conference on Multigrid Methods, Copper Mountain, Colorado. April 2005. *Relaxation and Subcycling on Complementary Grids as an Evaluative Tool in Correct Multigrid Cycling*.

11. MAA Southeastern Section Meeting, Raleigh, North Carolina. March 2005. *Googling Markov*.
12. Joint Mathematics Meetings, Atlanta, Georgia. January 2005. *Rising to the Occasion of Modeling Card Shuffling*.
13. 8th Copper Mountain Conference on Iterative Methods, Copper Mountain, Colorado. April 2004. *Adaptive Multigrid Via Subcycling on Complementary Grids*.
14. Joint Mathematics Meetings, MAA session on *Math in Art*, Phoenix, Arizona. January 2004. *Vectors, Computer Art and Toy Story*.
15. 7th Copper Mountain Conference on Iterative Methods, Copper Mountain, Colorado. April 2003. *Adaptive Multigrid Via Subcycling on Complementary Grids*.
16. Joint Mathematics Meetings, MAA session on *Mathematics Experiences in Business, Industry, and Government*, Baltimore, Maryland. January 2003. *Solving $A\mathbf{x} = \mathbf{b}$: a BIG research area*.
17. VIGRE Workshop on Finding an Academic Job, University of Washington, Seattle, Washington. November 2002. Panel.
18. 10th Copper Mountain Conference on Multigrid Methods, Copper Mountain, Colorado. April 2000. *Spectral AMGe*.
19. SIAM Northwest Regional Mathematics in Industry Workshop, Seattle, Washington. October 2000. *Industrial influences on the development of geometric and algebraic multigrid methods*.
20. 6th Copper Mountain Conference on Iterative Methods, Copper Mountain, Colorado. April 2000. *Element Based Algebraic Multigrid (AMGe)*.
21. 9th Copper Mountain Conference on Multigrid Methods, Copper Mountain, Colorado. April 1999. *Algebraic Multigrid Based on Element Interpolation (AMGe): Coarsening and the AMGe Measure*.

Invited “Mime-matics” Performances

** denotes accompanying mathematical workshop or stations led by Davidson College students

1. Math Day, University of Oklahoma, Norman, OK. *Mime-matics* mime show with Tanya Chartier. November 2011.
2. Furman University, Greenville, SC. *Mime-matics* mime show. September 2011.
3. Georgia College & State University, Milledgeville, GA. *Mime-matics* mime show. April 2011.
4. SUNY Potsdam, Potsdam, New York. *Mime-matics* mime show. April 2011.
5. MOSAIC, Davidson College, Davidson, North Carolina. *Mime-matics* mime show. February 2011.
6. University of Colorado, Boulder, Colorado. *Mime-matics* mime show. October 2010.
7. Charlotte Community School for Girls, Charlotte, North Carolina. *Mime-matics* mime show. September 2010.
8. Randolph-Macon College, Ashland, Virginia. *Mime-matics* mime show. September 2010.
9. World Science Festival Street Fair, New York, New York. *Mime-matics* mime show. June 2010.
10. Joint MAA-Michigan MichMATYC Spring Meeting, Ypsilanti, Michigan. May 2010. *Mime-matics*.
11. George Kitchen Memorial Lecture. Kalamazoo College, Kalamazoo Michigan. May 2010. *Mime-matics*.
12. Virginia Commonwealth University, Richmond, Virginia. *Mime-matics* mime show. April 2010.
13. Julia Robinson Mathematics Festival, University of North Carolina at Charlotte, Charlotte, North Carolina. *Mime-matics* mime show. March 2010.

14. March Mathness, Davidson College, Davidson, North Carolina. *Mime-matics* mime show. March 2010.
15. MOSAIC, Davidson College, Davidson, North Carolina. *Mime-matics* mime show. February 2010.
16. Wingate University, Wingate, North Carolina. October 2009.
17. Mint Hill Public Library, Mint Hill, North Carolina. July 2009.
18. Children's Community School (lower elementary), Davidson, North Carolina. May 2009.
19. Children's Community School (upper elementary and 7th grade), Davidson, North Carolina. May 2009.
20. Kenyon College, Gambier, Ohio. April 2009.
21. Denison University, Granville, Ohio. April 2009.
22. The Pines at Davidson, Davidson, North Carolina. April 2009.
23. Marcellus Middle School, Marcellus, Michigan. March 2009.
24. Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan. March 2009.
25. National Junior Honor Society, Bailey Middle School, Cornelius, North Carolina, December 2008.
26. University of Virginia, Charlottesville, Virginia. December 2008.
27. Tufts University, Medford, Massachusetts. November 2008.
28. Math Day, University of Washington, Seattle, Washington. March 2008.
29. Hope College, Holland, Michigan. February 2008.
30. Grand Valley State University, Allendale, Michigan. February 2008.
31. Beloit College, Beloit, Wisconsin. October 2007.
32. Madison Area Technical College, "Face Off" competition, Madison, Wisconsin. October 2007.
33. University of Wisconsin - Whitewater, Whitewater, Wisconsin. October 2007.
34. Summer Institute for Mathematics at the Univ. of Wa., Seattle, Washington. August 2007.
35. Davidson International Baccalaureate Middle School, Davidson, North Carolina. March 2007.
36. Children's Community School, Davidson, North Carolina. March 2007.
37. Northwest Cabarrus High School, Concord, North Carolina. January 2007.
38. Carolina Renaissance Festival's High School Day, Huntersville, North Carolina. October 2006.
39. Carolina Ren. Festival's Elementary School Day, Huntersville, North Carolina. November 2006.
40. ImaginOn: The Joe & Joan Martin Center, Charlotte, North Carolina. August 2006.
41. Duke Talent Identification Program at Davidson College, Davidson, North Carolina. July 2006.
42. Spruce Street School, Seattle, Washington. June 2006.
43. Thurgood Marshall Elementary School, Math Fair, Seattle, Washington. June 2006.
44. Alternative School #1, Seattle, Washington. May 2006.
45. Discovery Place**, Charlotte, North Carolina. April 2006.
46. Woodlawn School**, Davidson, North Carolina. February 2006.
47. Davidson Elementary School**, Davidson, North Carolina. January 2006.

Workshops

1. Seminar leader, Charlotte Teachers Institute: *Math Through Popular Culture*.
2. Summer Institute of Mathematics at the University of Washington, University of Washington, Seattle, Washington. Summer 2007. *Topics in Scientific Computing*.
3. Summer Institute of Mathematics at the University of Washington, University of Washington, Seattle, Washington. Summer 2003. *Vectors and the Mathematics of Computer Graphics*.

Publicity

Hart, George. "MAKE — Math Monday: Candy Images." <http://blog.makezine.com/archive/2011/04/math-monday-candy-images.html> (accessed April 18, 2011). The blog of Make Magazine posted the entry on Monday and by Thursday the blog had been reposted or appeared on over 100 blogs and webpages. The work was in collaboration with Steph Meador (12).

Hart, George. "MAKE — Math Monday: Candy Pi Calculator." <http://blog.makezine.com/archive/2011/10/math-monday-2.html> (accessed October 10, 2011). The blog of Make Magazine posted the entry on Monday and by Friday the blog had been reposted or appeared on over 100 blogs and webpages. My blog had been access over 4,800 times. The work was in collaboration with Austin Totty (12).

Mathematically ranking ranking methods press release from the SIAM Connect appeared May 25, 2011 and made its way to just over 300 blogs, online news sources and web pages.

Breen, M., *Math and Soccer* (interview along with Daniel Martin '11), Mathematical Moments from the AMS, April 2011, <http://www.ams.org/samplings/mathmoments/mm87-cork-podcast>.

Cherry, S., *Football Rankings Versus Google's PageRank* (interview along with Erich Kreutzer '10), IEEE Spectrum podcast, June 2011.

Kearn, V., *March Mathness Wrap-up*, Princeton University Press Blog, April 12, 2011.

Kearn, V., *March Mathness explained by Vickie Kearn and Tim Chartier*, Princeton University Press Blog, March 24, 2011.

James, D., *Bracketology 101*, Fox Charlotte (Television), March 14, 2011 (also appeared on March 15, 2011 on Fox News Rising).

Kearn, V., *Behind the scenes with math editor Vickie Kearn at the Joint Mathematics Meetings*, Princeton University Press Blog, March 1, 2011.

Mackenzie, Dana, *Kindling the Mathematical Muse*, Mathematics & Physical Science News, Simons Foundation, January 24, 2011.

Miller, K., *Making math + mime = a fun lesson*, Charlotte Observer, August 18, 2010, 1P, 3P.

Powell, D., *Stability Of New World Cup Ball Tested*, InsideScience.org, June 8, 2010. Also picked up by PhyOrg.com and FoxNews.com.

Price, J., *Math Awareness Month - Q&A with Dr. Tim Chartier*, Princeton University Press blog, April 22, 2010.

Mesmer, A., *Math meets March Madness at Davidson College*, News 14 Carolina (Television), March 18, 2010.

James, D., *Breaking Down Brackets*, Fox Charlotte (Television), March 17, 2010.

Gorski, C., *NCAA Tournament Pool: Leveling the Brackets*, InsideScience.org, March 15, 2010.

Pain, E., *If You Can't See It, Mime It*, Science Careers Blog, Science Magazine, February 8, 2010.

Mesmer, A., *Mathematics meets March Madness at Davidson*, News 14 Carolina (Television), March 19, 2009.

Henderson, B., *Davidson math whizzes show brackets skills*, Charlotte Observer, April 15, 2009. 2B.

Henderson, B., *Feeling Smart on Your Picks? Too Bad*, Charlotte Observer, March 19, 2009. 1-2B.

Fogarty, M. *Zero Crime Rate in Charlotte?* (top story in 10 PM news), Fox Charlotte, (Television) May 7, 2009.

Creativity in Mathematics press release from the American Mathematical Society appeared December 8–9, 2009 in the following:

| | | | |
|---------------------|---------------------|------------------|--------------------|
| EurekaAlert! | Newswise | redOrbit | PHYSorg.com |
| lifesciencesworld | sciencestage.com | Machines Like Us | e! Science News |
| integral playground | daylife.com | newstin.com | BrightSurf.com |
| HubPages | I Do Maths | RedTram | NewsGuide |
| NewsOnFeeds | World Dance Factory | SurfWax | Earth-Stream |
| siloBreaker.com | Wikio - Scotland UK | firstscience.com | Science News Daily |
| allbusiness.com | topix.com | wotnews.com.au | DavidsonNews.net |

Breen, M., *Math and Soccer* (interview), Mathematical Moments from the AMS, April 2008, <http://www.ams.org/mathmoments/audioFiles/podcast-mom-soccer.mp3>.

Miller, R., *Tim Chartier: From NExT to Sloan*, MAA FOCUS **28** (April 2008) 4, 3.

Miller, R., *Project NExT Helps Sloan Fellow Get Started*, MAA Online, March 11, 2008, <http://www.maa.org/news/031108Chartier.html>.

MapleSoft, *Maple adds an out of this world touch to math learning*, Media Coverage, April 12, 2007, <http://www.maplesoft.com/company/publications/articles/view.aspx?SID=3140>.

Marusak, J., *Davidson professor mixes mime, math*, Charlotte Observer, April 27, 2006. 1N, 7N.

Leitch, S., $M^2 + I + E = MIME$, Charlotte Observer, September 21, 2003. M1–M2.

Visiting Positions

Visiting Assistant Professor, Department of Mathematics, University of Washington, 2007 – 2008.

Faculty Visitor, Mathematical Modeling and Analysis Group, Theoretical Division, Los Alamos National Laboratory, Summer 2007.

Faculty Scholar, Center for Applied Scientific Computing, Lawrence Livermore National Laboratory (LLNL), Summers 2004, 2005.

Summer Intern, Center for Applied Scientific Computing, LLNL, Summers 1998, 1999, 2000.

Invited Workshop Participation and Visits

Algebraic Multigrid Summit, Lake City, Colorado, 2010, 2005, 2004, 2003, 2002, 2001, 2000.

Invited Guest, LLNL, August – September 2001, October 1999, January 1999.

Scalable Linear Solvers Workshop, Livermore, California, 2001, 1999. (Participation funded by LLNL)

Professional Memberships

American Mathematical Society

Mathematical Association of America (also a charter member of SIGMA-ARTS special interest group)

Society of Industrial and Applied Mathematicians

Service

Professional

1. Chair of the Advisory Council of Museum of Mathematics, which will be the nation's first museum of mathematics, 2011 – present.
2. Charlotte Teachers Institute University Advisory Council, 2010 – present.
3. Advised ESPN's Sports Science show on stories related to triple cork in X Games snowboarding competition, new soccer ball design for 2010 World Cup, accuracy of a bicycle kick, and the Home Run Derby.
4. Advisory Council for Museum of Mathematics, which will be the nation's first museum of mathematics.
5. Session Co-organizer – *Teaching Calculus to Students who Have Had AP Calc: Challenges and Solutions*, Joint Mathematics Meetings, San Francisco, California, January 2010.
6. Special Session Co-organizer – *Ranking and Clustering*, MAA Southeastern Section Meeting, Elon, North Carolina, March 2010.
7. Committee on the Henry L. Alder Awards for Distinguished Teaching, Mathematical Association of America. 2009 – 2012.
8. Trevor Evans Prizes Committee, Mathematical Association of America. 2008 – 2011.
9. *Math Horizons* Editorial Board. 2004 – Present.
10. Session Co-organizer – *Adaptive Algebraic Multigrid Methods*, SIAM Annual Meeting, Denver, Colorado, July 2008.
11. Session Co-organizer – *Performing Mathematics*, Joint Mathematics Meetings, Washington D.C. January 2009.
12. AMS Sectional Meeting Special Session *Special Session on Recent Applications of Numerical Linear Algebra* co-organizer, 2007.
13. Joint Mathematics Meetings MAA Contributed Paper session *Entertaining with Math* organizer, 2007.
14. SIAM Conference on Computational Science & Engineering Minisymposium *Enhancing Multigrid Performance by Compatible Relaxation and Self-Adaptation* co-organizer, 2005.
15. Project NExT workshop *Venturing into Textbook Writing* co-organizer, 2003.
16. Project NExT consultant, 2010.
17. Undergraduate poster session organizer, MAA Southeastern Section Meeting, 2005, 2006.
18. Undergraduate Poster Session judge, Joint Mathematics Meetings, 2003, 2004, 2005, 2007, 2009, 2010.
19. Undergraduate talk judge, MathFest, 2009.
20. Referee for *UMAP Journal*, *SIAM Journal on Scientific Computing*, *Journal of Online Mathematics and its Applications*, *IEEE Signal Processing Letters*, and *International Journal of Mathematics and Mathematical Sciences*.

January, 2012