

Dr. John Quintanilla

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Education

Princeton University

Ph.D. in Civil Engineering and Operations Research (January 1997)
Thesis Topic: “Microstructure and Properties of Random Materials”
Research Advisor: Prof. Salvatore Torquato
M.A. in Civil Engineering and Operations Research (November 1994) GPA: 4.15/4.0

Stanford University

M.S. in Mathematics (June 1992) GPA: 3.86/4.0
B.S. in Mathematics (June 1992) GPA: 3.89/4.0

Employment

University of North Texas

Lecturer, Department of Mathematics: August 1996 – July 1997.
Assistant Professor, Department of Mathematics: August 1997 – June 2003.
Associate Professor, Department of Mathematics: June 2003 – June 2011.
Professor, Department of Mathematics: June 2011 – present.
University Distinguished Teaching Professor: 2010 – present.
Associate Dean for Undergraduate Studies, College of Science: March 2017 – May 2022.
Dean, College of Science: June 2022 – present.

Teaching

University of North Texas

Organized Courses

1. Math 1650, "Precalculus" (TAMS): Fall 1996-2007.
2. Math 1650, "Precalculus": Spring 1998.
3. Math 1680, "Elementary Probability and Statistics": Fall 1997-1999, 2002; Spring 2000, 2003, 2006; Summer I 2002-2003; Summer II 2002.
4. Math 1710, "Calculus I" (TAMS): Spring 1997-2008.
5. Math 1720, "Calculus II": Spring 1999.
6. Math 1780, "Probability": Fall 1996.
7. Math 2000, "Discrete Mathematics": Fall 2015-2016, 2018-2021; Spring 2016-2022.
8. Math 2100, "Functions and Modeling for Secondary Mathematics Instruction": Spring 2019.
9. Math 3410, "Differential Equations I": Fall 2000, 2011; Spring 2004, 2005, 2017, 2020-2022.
10. Math 3420, "Differential Equations II": Spring 2001.
11. Math 3680/4980, "Applied Statistics": ; Fall 2007-2016; Spring 2007-2008, 2010-2016
12. Math 4050, "Advanced Topics in the Secondary Mathematics Curriculum": Fall 2014-2021, Spring 2009-2014.
13. Math 4500, "Introduction to Topology": Spring 1997.
14. Math 4610, "Probability": Fall 2001, 2003, 2006, 2010; Spring 2015, 2017-2018.
15. Math 4650, "Statistics": Spring 2002.
16. Math 5000, "Instructor Issues for the Professional Mathematician": Fall 2004-2005, 2017.
17. Math 5810, "Probability": Fall 2003, 2006.

Special Problems Courses

18. Math 4900, "Special Topics": Fall 1997.
19. Upward Bound Math and Science: Summer 1998, 2000-2007.
20. Math 4900, "Seminar in Problem Solving": Fall 2001-2002, Spring 2002.
21. Math 4900, "Statistics," Summer 2003.
22. Math 4900, "Partial Differential Equations," Spring 2004.
23. Math 4900, "Actuarial Mathematics," Spring 2005.
24. Math 4900, "Special Problems", Spring 2005 for undergraduate research.
25. Math 4900, "Special Problems", Summer 2005 for undergraduate research.
26. Math 4900, "Probability," Summer 2007.
27. Math 4900, "Special Problems", Summer 2007 for undergraduate research.
28. Math 4900, "Applied Statistics," Summer 2008.
29. Math 4900, "Special Problems", Summer 2008 for undergraduate research.
30. Math 4900, "Special Problems", Spring 2009 for undergraduate research/honors thesis.
31. Math 4900, "Topics in Secondary Mathematics," Spring 2011-2012.
32. Math 4951, "Honors College Thesis," Summer 2009.
33. Math 5900, "Stochastic Geometry": Spring 2006
34. Math 5900, "Special Problems": Fall 2008
35. Math 5900, "Concepts and Techniques in Geometry for Secondary Mathematics Teachers": Summer 2013
36. Math 5900, "Special Problems": Fall 2013

37. Math 6900, “Stochastic Geometry”: Fall 2005, Spring 2006

Princeton University

Teaching Assistant: Fall 1995 “Computer Methods for Problem Solving”: Spring 1995.

Stanford University

Homework Grader: September 1989 - June 1992.

Senior Tutor: January 1989 - June 1991.

AWARDS

1. National Science Foundation Minority Graduate Fellowship, 1992.
2. Ford Foundation Predoctoral Fellowship for Minorities (declined), 1992.
3. Excellence in Teaching Award, Princeton University Engineering Council, 1996.
4. Nominee, Association of Princeton Graduate Alumni Teaching Award, 1996.
5. Texas Project NExT (New Experiences in Teaching) Fellow, 1997-1998.
6. Honorary Member, UNT Golden Key National Honor Society, 1999.
7. Nominee, Fessor Graham Award, 2001.
8. Coca-Cola Scholars Foundation Joseph B. Whitehead Educator of Distinction Award, 2001.
9. Who's Who Among America's Teachers, 2002.
10. Coca-Cola Scholars Foundation Joseph B. Whitehead Educator of Distinction Award, 2003.
11. UNT President's Council Teaching Award, 2004.
12. Texas Section of the Mathematical Association of America Distinguished College or University Teaching of Mathematics Award, 2005.
13. Honorary Alumnus, Texas Academy of Mathematics and Science, 2005.
14. Teacher of Merit, Intel Science Talent Search, 2008.
15. Finalist, UNT Teacher Scholar Award, 2009.
16. University Distinguished Teaching Professor, 2010 – present.
17. UNT nominee for U.S. Professor of the Year, 2014 and 2015.
18. Faculty Teaching Award, UNT Department of Mathematics, 2015.
19. UNT nominee for 2016 Minnie Stevens Piper award, 2015.

THESIS COMMITTEES

Advisor

1. Pavan Appannagari (Masters). Defense of “Survival Probability and Dynamic Programming” made on May 31, 2005.
2. Chris Tiftickjian (Masters). Defense of “Corner Positive Matrices and the Class of Unit Covariances” made on August 11, 2006.
3. Benjamin Owens (Masters). Defense of “Continuum Percolation with Steps on the Square or Disc” made on July 2, 2009.
4. Damon Gaddis (Masters). Defense of “Does having taken Discrete Mathematics benefit students when they later take an introductory proofs course?” made on July 7, 2014.
5. Elizabeth Rasmussen (Masters). Defense of “Structural Analysis of the Effectiveness of the Math Lab” made on June 30, 2016.
6. Michael Lee (Masters). Defense of “Do State School Rankings and Test Results Have Predictive Value in First-Year College Success?” made on September 18, 2017.

Minor Professor

1. Carole Hayata (Ed.D. from Department of Teacher Education and Administration; Colleen Eddy, Major Professor). Defense of “The Development of Algebraic Reasoning in Undergraduate Elementary Preservice Teachers” made on July 10, 2012.
2. Layne Heitz (Ed.D. from Department of Teacher Education and Administration, Colleen Eddy, Major Professor). Defense of “The Validation of a Short-Cycle Formative Assessment Observation Protocol for Science and Mathematics Instruction” was made on September 19, 2013.
3. Melanie Fields (Ph.D. from Department of Teacher Education and Administration, Jeanne Tunks, Major Professor). Defense of “Transfer from a UTeach Replication Site to the Classroom: A Study of First and Second Year Instructional Practices” was made on February 16, 2015.

Committee Member

1. Dissertation Committee for Artemi Berlinkov, 2001.
2. Master's Thesis Committee for Mario Jimenez, 2002.
3. Dissertation Committee for LeRoy Valdes, 2002.
4. Master's Thesis Committee for Orestis Vantzios, 2006.
5. Master's Thesis Committee for John Adams, 2006.
6. Master's Thesis Committee for Evan Brooks, 2007.
7. Master's Thesis Committee for Eduardo Espínola, 2012.
8. Master's Thesis Committee for Joe Czop, 2015.
9. Dissertation Committee for Jose Islas, 2015.
10. Dissertation Committee for Andrew Allen, 2018.
11. Dissertation Committee for Edmond Brophy, 2019.
12. Dissertation Committee for Di Wu, 2019.

Research

BOOKS

1. M. Bittinger, N. Brand and J. Quintanilla, **Calculus for the Life Sciences**, 1st edition (Addison-Wesley, New York, 2006).

PEER-REVIEWED AND INVITED PUBLICATIONS

Stochastic Geometry and Applications to Materials Science

2. J. Quintanilla and S. Torquato, "New Bounds on the Elastic Moduli of Suspensions of Spheres," *Journal of Applied Physics*, **77**, pp. 4361-4372 (1995). This article was funded by a National Science Foundation Minority Graduate Fellowship.
3. J. Quintanilla and S. Torquato, "Microstructure and Conductivity of Hierarchical Laminate Composites," *Physical Review E*, **53**, pp. 4368-4378 (1996). This article was funded by a National Science Foundation Minority Graduate Fellowship.
4. J. Quintanilla and S. Torquato, "Lineal Measures of Clustering in Overlapping Particle Systems," *Physical Review E*, **54**, pp. 4027-4036 (1996). This article was funded by a National Science Foundation Minority Graduate Fellowship.
5. J. Quintanilla and S. Torquato, "Clustering Properties of d -dimensional Overlapping Spheres," *Physical Review E*, **54**, pp. 5331-5339 (1996). This article was funded by a National Science Foundation Minority Graduate Fellowship.
6. J. Quintanilla and S. Torquato, "Microstructure Functions for a Model of Statistically Inhomogeneous Random Media," *Physical Review E*, **55**, pp. 1558-1565 (1997). This article was funded by a National Science Foundation Minority Graduate Fellowship.
7. J. Quintanilla and S. Torquato, "Local Volume Fraction Fluctuations in Random Media," *Journal of Chemical Physics*, **106**, pp. 2741-2751 (1997). This article was funded by a National Science Foundation Minority Graduate Fellowship.
8. J. Quintanilla and S. Torquato, "Clustering in a Continuum Percolation Model," *Advances in Applied Probability*, **29**, pp. 327-336 (1997). This article was funded by a National Science Foundation Minority Graduate Fellowship.
9. J. Quintanilla and S. Torquato, "Local Volume Fraction Fluctuations in Periodic Heterogeneous Media," *Journal of Chemical Physics*, **110**, pp. 3215-3219 (1999).
10. J. Quintanilla, "Microstructure and Properties of Random Heterogeneous Materials: A Review of Theoretical Results," *Polymer Engineering and Science*, **39**, pp. 559-585 (1999).
11. J. Quintanilla and S. Torquato, "Percolation in a Model of Statistically Inhomogeneous Random Media," *Journal of Chemical Physics*, **111**, pp. 5947-5955 (1999). This article was funded by a UNT Faculty Research Grant and a UNT Junior Faculty Summer Research Fellowship.
12. J. Quintanilla, "Microstructure Functions for Random Media with Impenetrable Particles," *Physical Review E*, **60**, pp. 5788-5794 (1999). This article was funded by a UNT Junior Faculty Summer Research Fellowship.
13. J. Quintanilla, S. Torquato and R. M. Ziff, "Efficient Measurement of the Percolation Threshold for Fully Penetrable Disks," *Journal of Physics A: Mathematical and General*, **33**, pp. L399-L407 (2000). This article was funded by a UNT Junior Faculty Summer Research Fellowship.
14. J. Quintanilla, "Measurement of the Percolation Threshold for Fully Penetrable Disks of Different Radii," *Physical Review E*, **63**, 061108 (2001). This article was funded by a UNT Junior Faculty Summer Research Fellowship.

15. W. Brostow, A. M. Cunha, J. Quintanilla and R. Simões, “Crack Formation and Propagation in Molecular Dynamics Simulations of Polymer Liquid Crystals,” *Macromolecular Theory and Simulations*, **11**, pp. 308-314 (2002).
16. J. Quintanilla, R. F. Reidy, B. P. Gorman and D. W. Mueller, “Gaussian Random Field Models of Aerogels,” *Journal of Applied Physics*, **93**, pp. 4584-4589 (2003).
17. S. Zuyev and J. Quintanilla, “Estimation of Percolation Thresholds via Percolation in Inhomogeneous Media,” *Journal of Mathematical Physics*, **44**, pp. 6040-6046 (2003).
18. J. Quintanilla, “Measures of Clustering in Systems of Overlapping Particles,” *Mechanics of Materials*, **38**, pp. 848-857 (2006).
19. J. A. Quintanilla and W. M. Jones, “Using Convex Quadratic Programming to Model Random Media with Gaussian Random Fields,” *Physical Review E*, **75**, 046709 (2007).
20. J. A. Quintanilla, J. T. Chen, R. F. Reidy, and A. J. Allen, “Versatility and Robustness of Gaussian Random Fields for Modeling Random Media,” *Modelling and Simulation in Materials Science and Engineering*, **15**, pp. S337-S352 (2007).
21. J. A. Quintanilla and R. M. Ziff, “Asymmetry of Percolation Thresholds of Fully Penetrable Disks with Two Different Radii,” *Physical Review E*, **76**, 051115 (2007).
22. J. A. Quintanilla, “Necessary and Sufficient Conditions for the Two-Point Phase Probability Function of Two-Phase Random Media,” *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **464**, pp. 1761-1779 (2008).
23. G. Scherer, J. Zhang, J. A. Quintanilla and S. Torquato, “Hydration and Percolation at the Setting Point,” *Cement and Concrete Research*, **42**, 665–672 (2012).

Mathematics Education

24. J. Quintanilla, “Beyond the Chalkboard: The Job of a Math Professor”, *Imagine*, **5**, No. 4, p. 10 (March/April 1998).
25. J. Quintanilla, “Ascending and Descending Fractions,” *Mathematics Teacher*, **95**, pp. 539-542 (2002).
26. J. Quintanilla, “The Taylor Polynomials of $\sin \theta$,” *College Mathematics Journal*, **38**, No. 1, pp. 58-59 (2007). This article was selected for inclusion in Caren L. Diefenderfer and Roger B. Nelsen (eds.), **The Calculus Collection: A Resource for AP and Beyond** (MAA, Washington, DC, 2009).
27. J. Quintanilla, “Fallacies, Flaws, and Flimflam,” *College Mathematics Journal*, **38**, No. 5, pp. 375-376 (2007).
28. J. A. Quintanilla, J. Liu, N. D'Souza and R. Mirshams, “Integration of Engineering Concepts in Freshman Calculus,” *2007 American Society of Engineering Education Annual Conference*, AC 2007-1878.
29. M. Harris, J. McDonald, J. Quintanilla and C. Woods, “Preparing Science and Math Teachers at the University of North Texas,” *American Physical Society Forum on Education*, pp. 11-13 (Fall 2012).
30. N. Brand and J. A. Quintanilla, “Modeling Terminal Velocity,” *College Mathematics Journal*, **44**, No. 1, pp. 57-61 (2013).
31. J. Quintanilla, “Name That Tune: Teaching Predicate Logic with Popular Culture,” *MAA Focus*, **36**, No. 4, pp. 27-28 (August/September 2016).
32. J. Quintanilla, “Deriving the Regression Line with Algebra,” *Mathematics Teacher*, **111**, No. 8, pp. 594-598 (April 2017).
33. S. L. Cobb, M. A. McPherson, D. J. Molina, J. Quintanilla, E. Rasmussen, and J. J. Rous, “Teaching Economics to the Masses: The Effects of Student Help Centers on Academic Outcomes,” *International Review of Economics Education*, **27**, pp. 16-23 (2018). This paper was selected for the Best Paper Award 2018 by the International Review of Economics Education.

34. J. Quintanilla, "Developing Intuition for Logarithms," *Mathematics Teacher*, **112**, No. 1, p. 80 (September 2018).
35. J. Quintanilla, "HyFlex Teaching During the Pandemic (and Beyond?)," *MAA FOCUS*, **41**, No. 4, pp. 22-24 (2021).
36. J. Quintanilla, "Parabolic Properties from Pieces of String," *Math Horizons*, **29**, No. 3, pp. 20-23 (2022).
37. J. Quintanilla, "A New Derivation of Snell's Law Without Calculus," *College Mathematics Journal*, **53**, No. 2, pp. 140-145 (2022)

UNDERGRADUATE RESEARCH

1. Advisor, Jennifer Newsom, 1998.
2. Advisor, Jonathan Burns, 1998-2000.
3. Advisor, Bert Chan, 2000.
4. Advisor, Su Kim, 2000.
5. Advisor, Albert Shiue, 2001.
6. Advisor, Steve Brunton, 2001-2002.
7. Co-advisor, Shawn Ranjbaran, 2003-2004.
8. Co-advisor, Allen Torng, 2003-2004.
9. Co-advisor, John Freeman, 2003-2004.
10. Co-advisor, Brian Britton, 2003-2005.
11. Co-advisor, Russell Landry, 2003-2004.
12. Advisor, Ambreen Rahman, 2004-2005.
13. Advisor, Max Jones, 2004-2006. (Winner of a 2006 Barry M. Goldwater scholarship.)
14. Co-advisor, Jared Tucker, 2005.
15. Advisor, Abigail Goring, 2005.
16. Co-advisor, Timmy Chan, 2005.
17. Advisor, Jordan Chen, 2005.
18. Advisor, Osbert Bastani, 2006-2008. (Semifinalist, 2007 Siemens Westinghouse Competition.)
19. Advisor, Di Wu, 2006-2008. (Semifinalist, 2007 Siemens Westinghouse Competition.)
20. Advisor, Robert Schumaker, 2008.
21. Advisor, Tonya March, 2009. (Published by T. March in *The Eagle Feather* in 2009.)

GRANTS

Teaching Grants

1. (with M. Monticino) University of North Texas, Teaching with Technology Category (Summer 1999); Project Title: *Distributed Learning Statistics Course and Virtual Statistics Center*; Amount Granted: \$3,850; Amount Requested: \$5,200.
2. (with M. Monticino) University of North Texas, Undergraduate Instructional Development Grant (Summer 1999); Project Title: *Virtual Statistics Center*; Amount Granted: \$7,700; Amount Requested: \$15,600.
3. Senior Personnel (in support of R. A. Mirshams, N. A. D'Souza, O. N. Garcia, S. Nasrazadani, and M. R. Varanasi, co-PIs) National Science Foundation, Engineering Education Centers, Department Level Reform Program (March 2005); Project Title: *Planning for an Innovative Interdisciplinary Mechanical and Energy Engineering Curriculum*; Amount Granted: \$99,954; Amount Requested: \$99,954.
4. Senior Personnel (in support of R. A. Mirshams, N. A. D'Souza, O. N. Garcia, S. Nasrazadani, and M. R. Varanasi, co-PIs) National Science Foundation, Engineering Education Centers, Department Level Reform Program (December 2005); Project Title: Research Experiences for Teachers supplement to *Planning for an Innovative Interdisciplinary Mechanical and Energy Engineering Curriculum*; Amount Granted: \$20,000; Amount Requested: \$20,000.

5. co-PI (with M. Harris, co-PI) National Mathematics and Science Initiative and Greater Texas Foundation (April-December 2007); Project Title: *Teach North Texas*; Amount Granted: \$2,400,000 (2008-2013); Amount Requested: \$2,400,000.
6. co-PI (with M. Harris, co-PI) Greater Texas Foundation (April 2008); Project Title: *Teach North Texas Math and Science Teacher Scholarship Program*; Amount Granted: \$150,000 (2008-2010); Amount Requested: \$150,000.
7. Educational Advancement Foundation (November 2008); Project Title: *Teach North Texas: Functions and Modeling*; Amount Granted: \$21,150; Amount Requested: \$39,250.
8. co-PI (with M. Harris, co-PI) Texas Instruments Foundation (August 2009); Project Title: *Teach North Texas TI Foundation Master Teachers*; Amount Granted: \$425,000; Amount Requested: \$425,000.
9. co-PI (with C. Eddy [PI], L. Hughes, P. Harrell and C. Richardson) National Science Foundation; Project Title: UNT Science and Mathematics Robert Noyce Scholarships; Amount Granted: \$749,965; Amount Requested: \$749,965.
10. PI (with M. Harris, co-PI) Texas Instruments Foundation (March 2011); Project Title: *Teach North Texas Program*; Amount Granted: \$634,000; Amount Requested: \$634,000.
11. Co-PI (with K. Callahan [PI], B. Combes, L. Holloway and M. DeWein) National Science Foundation (May 2012); Project Title: *RDE-MB 1: A Comprehensive Program of Evidence-Based Interventions to Enhance the Learning Outcomes for University Students with Autism Spectrum Disorders in STEM Majors*; Amount Granted: \$0; Amount Requested: \$797,745.
12. Co-PI (with V. Vaidyanathan [PI] and J. Schaake) National Science Foundation (December 2012); Project Title: STEP to Success; Amount Granted: \$0; Amount Requested: \$2,497,929.
13. PI (with P. Harrell, co-PI) Texas Instruments Foundation (March 2011); Project Title: *Teach North Texas Program*; Amount Granted: \$635,000; Amount Requested: \$635,000.

Research Grants

1. University of North Texas, RIP Category (Summer 1997); Project Title: *Characterizing the Microstructure of Random Heterogeneous Materials*; Amount Granted: \$2,500; Amount Requested: \$5,000.
2. University of North Texas, Junior Faculty Summer Research Fellowship (Summer 1997); Project Title: *Characterizing the Microstructure of Random Heterogeneous Materials*; Amount Granted: \$3,500; Amount Requested: \$3,500.
3. University of North Texas, Junior Faculty Summer Research Fellowship (Summer 1998); Project Title: *Microstructure and Effective Properties for a New Model of Random Heterogeneous Materials*; Amount Granted: \$3,500; Amount Requested: \$3,500.
4. University of North Texas, Junior Faculty Summer Research Fellowship (Summer 2000); Project Title: *Percolation Phenomena for Fully Penetrable Disks and Spheres*; Amount Granted: \$5,000; Amount Requested: \$5,000.

CONFERENCE PROCEEDINGS

Invited Presentations

1. *Modeling Inhomogeneous Random Media*, invited talk presented for the *Joint AMS-SMM International Meeting*, Denton, TX, May 19-22, 1999. With S. Torquato.
2. *Stochastic Geometry: Simulation and Computation of Cluster Statistics*, invited talk presented for the *41st Annual Technical Meeting of the Society of Engineering Science*, Lincoln, NE, October 10-13, 2004.
3. *Instructor Issues for the Professional Mathematician*, invited talk presented for Project NExT and Project ACCESS at the *2006 MAA Texas Section Meeting*, Wichita Falls, TX, April 7, 2006.

4. *Inspiring Students Beyond Computational Proficiency*, invited address presented for the 2006 MAA Texas Section Meeting, Wichita Falls, TX, April 7, 2006.
5. *Analytic and Computational Reconstruction of Random Media*, invited talk presented at the 7th World Congress on Computational Mechanics, Los Angeles, CA, July 21, 2006.
6. *Characterization of Gaussian Random Field Models of Aerogels*, presented at the 2008 ASME International Mechanical Engineering Congress and Exposition, Boston, MA, November 3, 2008. With O. Bastani and D. Wu.
7. *Mathematical Rotary Telephones*, presented at the 2022 MAA Texas Section Meeting, Denton, TX, March 27, 2022.

Contributed Presentations

1. *Microstructure and Properties of Random Heterogeneous Materials: A Review of Theoretical Results*, presented for the International Conference on Polymer Characterization, Denton, TX, January 8-10, 1997.
2. *Microstructure Functions for a Model of Statistically Inhomogeneous Random Media*, presented for the Second SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, PA, May 12-14, 1997. With S. Torquato.
3. *Microstructure Functions for Models of Impenetrable Nonaligned Particles*, presented for the 1998 Joint Mathematics Meetings, Baltimore, MD, January 7-10, 1998.
4. *Simulating Models of Impenetrable Particles*, presented for the International Conference on Polymer Characterization, Denton, TX, January 11-14, 2000.
5. *Computer Simulation and Animation of Crack Propagation in Polymer Liquid Crystals*, poster presented for the International Conference on Polymer Characterization, Denton, TX, January 11-14, 2000. With W. Brostow, C. Karashin and J. Khatib.
6. *Percolation and Microstructure for a Model of Statistically Inhomogeneous Disks*, presented for the Third SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, PA, May 21-24, 2000. With S. Torquato and R. Ziff.
7. *Making Your Retirement Fund Last Forever*, presented for the 2001 Joint Mathematics Meetings, New Orleans, LA, January 10-13, 2001.
8. *Making Your Retirement Fund Last Forever*, presented for the 2001 Texas MAA Section Meeting, Houston, TX, March 29-31, 2001.
9. *Mathematical Models of Aerogels*, presented for the SIAM Conference on Mathematical Aspects of Materials Science, Los Angeles, California, May 23-26, 2004.
10. *Proofs Without Words: The Maclaurin Polynomials of $\sin x$* , presented for the 2005 Texas MAA Section Meeting, Arlington, TX, April 14-16, 2005.
11. *Molecular Dynamics Simulations of Chain-Forming Inorganic Glasses*, presented for the 65th Annual Technical Conference of the Society of Plastics Engineers, Boston, MA, May 2005. With W. Brostow, K. Kavi, J.-M. Saiter and L. White.
12. *Convex Quadratic Programming and Gaussian Random Fields*, presented for the 2006 MAA Texas Section Meeting, Wichita Falls, TX, April 7, 2006. With W. M. Jones. Winner of an Outstanding Student Presentation Award.
13. *Verifying Einstein's Theory of General Relativity in a First-Semester Differential Equations Class*, presented for the 2006 MAA Texas Section Meeting, Wichita Falls, TX, April 7, 2006.
14. *Hydration and Percolation*, presented for the International Summit on Cement Hydration Kinetics and Modeling, Quebec City, QC, July 27-29, 2009. With G. Scherer, S. Peethamparan, J. Zhang, E. Weissinger, and S. Torquato.
15. Panelist for *Research Methods Course Retreat*, presented for the 2011 UTeach Institute-NMSI Conference, Austin, TX, May 24, 2011.

16. *A Capstone Mathematics Course for Future Secondary Teachers*, presented for the *Science and Mathematics Teacher Imperative 2011 National Conference*, Austin, TX, May 25, 2011. With S. Hobbs and S. Mitchell.
17. Panelist for *University Replication Panel: Lessons Learned*, presented for the *2011 UTeach Institute-NMSI Conference*, Austin, TX, May 26, 2011. With P. Romero, D. Franceschetii, S. Millsap, B. Neal, K. Harper.
18. *A Capstone Course for Future Mathematics Teachers*, presented for the *Science and Mathematics Teacher Imperative 2011 National Conference*, Portland, OR, June 9, 2011.
19. *A Capstone Course for Future Mathematics Teachers*, presented for the *2011 NSF Robert Noyce Teacher Scholarship Program Conference*, Washington, DC, July 7, 2011.
20. *Beyond Functions and Modeling: Specialized Courses for Future Secondary Mathematics Teachers*, presented for the *2012 UTeach Institute-NMSI Conference*, Austin, TX, May 31, 2012. With C. Collier.
21. *A Capstone Mathematics Course for Future Secondary Teachers*, presented for the *2014 UTeach Institute-NMSI Conference*, Austin, TX, May 20, 2014. With T. Kringen and A. Mendez.
22. *Teaching Predicate Logic with Popular Culture*, presented for the *96th Annual Meeting of the Texas Section of the MAA*, Nacogdoches, TX, April 1, 2016.
23. *How Precalculus Students Can Find the Decimal Expansions of Logarithms*, presented for the *97th Annual Meeting of the Texas Section of the MAA*, Commerce, TX, March 31, 2017.

UNT PRESENTATIONS

For the Department

1. *The Microstructure of the Poisson Blob Model*: presented in the Department's *Brown Bag Seminar*, November 1, 1996, 2 PM.
2. *Mathematical Methods for Characterizing the Microstructure and Effective Properties of Random Heterogeneous Materials*: presented for the Department's *Faculty Colloquium Series*, January 30, 1998, 1:00 PM.
3. *Prove that $\lim_{n \rightarrow \infty} \sum_{k=0}^n e^{-k} \frac{k^{n-k}}{(n-k)!} = \frac{1}{2}$* : presented for the Department's *Graduate Student Seminar Series*, February 27, 1998, 1:00 PM.
4. *Mathematical Methods for Characterizing the Microstructure and Effective Properties of Random Heterogeneous Materials*: presented for the Department's *Stochastic Seminar Series*, October 1, 1998, 12:30 PM.
5. *Percolation Phenomena in Inhomogeneous Random Media*: presented for the Department's *Stochastic Seminar Series*, April 23, 1999, 12:30 PM.
6. *Measuring Percolation Thresholds*, presented for the Department's *Stochastic Seminar Series*, September 30, 1999, 12:30 PM.
7. *Numerical Solutions to Portfolio Problems*, presented for the Department's *Stochastic Seminar Series*, November 11, 1999, 12:30 PM.
8. *Making Your Retirement Fund Last Forever*: presented jointly for the Department's *Graduate Student Seminar* and *Stochastic Seminar Series*, February 16, 2001, 12:00 PM.
9. *How to Make Your Retirement Fund Last Forever*: presented for the Department's *Stochastic Seminar Series*, November 2, 2001, 12:00 PM.
10. *An Elementary Proof of Pearson's Chi-Squared Test*: presented for the Department's *Stochastic Seminar Series*, February 15, 2002, 12:00 PM.
11. *Modeling with Gaussian Random Fields*, presented for the Department's *Stochastic Seminar Series*, February 14, 2003, 12:00 PM.

12. *Using Scattering Data to Mathematically Model Aerogels*, presented for the Department's *Stochastic Seminar Series*, March 7, 2003, 12:00 PM.
13. (with W. M. Jones) *Filtering Out Noise to Fit a Prescribed Model*, presented for the Department's *Applied Mathematics Seminar*, September 9, 2005, 1:00 PM.
14. *Gaussian Random Field Models of Aerogels*, presented for the Department's *Applied Mathematics Seminar*, April 13, 2007, 1:00 PM.
15. *Microstructure and Properties of Random Heterogeneous Materials*, presented for the *UNT Math Club*, October 5, 2007, 1:00 PM.
16. *The Mathematics of Music and Language*, presented for the *Undergraduate Mathematics Research Colloquium Series*, March 2, 2011, 5 PM.
17. *Teaching Terminal Velocity*, presented for the *Seminar in Teaching Undergraduate Mathematics*, September 9, 2011, 12:00 PM.
18. *Using Precalculus to Derive the Taylor Polynomials of $\sin x$* , presented for the *UNT RTG Informal Mathematics Research Problem Session*, February 24, 2012, 12:00 PM.
19. *Grading My Students' Homework by Computer?*, presented for the *Seminar in Teaching Undergraduate Mathematics*, November 16, 2012, 12:00 PM. With W. Cherry.
20. *Verifying Einstein's Theory of General Relativity using First-Semester Differential Equations*, presented for the *RTG Informal Mathematics Research Problem Session*, April 26, 2013, 12:00 PM.
21. *Lessons Learned from Teaching Large Sections*, presented for the *Seminar in Teaching Undergraduate Mathematics*, October 4, 2013, 12:00 PM. With M. A. Teel and S. Widmer.
22. *A Mathematics Course for Future Secondary Teachers*, presented for the *Seminar in Teaching Undergraduate Mathematics*, September 5, 2014.
23. *Lecturing and Time Management*, presented for the *Seminar in Teaching Undergraduate Mathematics*, February 5, 2016.
24. *Teaching Predicate Logic with Popular Culture*, presented for the *Seminar in Teaching Undergraduate Mathematics*, April 25, 2016.
25. *Techniques for Teaching Students How to Write Proofs*, presented for the *Seminar in Teaching Undergraduate Mathematics*, February 17, 2017.

Other UNT Presentations

1. *Characterizing the Microstructure of Random Media: Theory and Applications*: presented for the *UNT Seminar in Materials Science and Engineering*, February 19, 1997, 3:30 PM.
2. *Rigorous Bounds on the Effective Properties of Random Heterogeneous Materials Through their Microstructure*: presented for the *UNT Physics Department Colloquium Series*, September 16, 1997, 3:30 PM.
3. *Mathematical Methods for Characterizing the Microstructure and Effective Properties of Random Heterogeneous Materials*: presented for *TAMS Junior Seminar Series*, February 16, 1998, 5:00 PM.
4. *Probability, Stochastic Geometry and Materials Science*: presented for *TAMS Junior Seminar Series*, October 26, 1998, 5:00 PM.
5. *Probability, Stochastic Geometry and Materials Science*: presented for *TAMS Junior Seminar Series*, October 25, 1999, 5:00 PM.
6. *Probability, Stochastic Geometry and Materials Science*: presented for *TAMS Junior Seminar Series*, October 9, 2000, 5:00 PM.
7. *Applying Mathematics to Problems in Random Materials*: presented jointly for the *UNT Physics Department Colloquium Series* and the *UNT Materials Science Department Colloquium Series*, October 10, 2000, 3:30 PM.
8. *Computational Issues in Applied Mathematics*, presented for *UNT Interdisciplinary Research Seminar Series*, September 10, 2004, 12:00 PM.

9. *Should You Trust the Polls? A Critique of Technopoly*, presented for the *TAMS Thursday Think Tank Series*, September 29, 2005, 8:00 PM.
10. *Inspiring Students Beyond Computational Proficiency*, presented for the *UNT Center for Teaching, Learning, and Assessment*, October 4, 2007, 12:00 PM.
11. *Exploring Science Education*, presented for the *I Have A Dream conference*, July 24, 2009. With A. Popa and B. Probst.
12. *Base-10 Logarithms and Their Decimal Representations*, presented for *UNT First Flight Week*, August 23, 2018.
13. *A Brief History of Base-10 Logarithms*, presented for *UNT First Flight Week*, August 20, 2019.

OTHER PRESENTATIONS

1. *Characterizing the Microstructure of Random Materials*: presented for the *Calvin Mathematics Colloquium*, held at Calvin College, Grand Rapids, MI, February 29, 1996, 3:30 PM.
2. *Mathematical Methods for Characterizing the Microstructure and Effective Properties of Random Heterogeneous Materials*: presented for the *SMU Mathematics Department Research Colloquium Series*, held at Dallas, TX, October 1, 1997, 3:30 PM.
3. *Mathematical Methods for Characterizing the Microstructure and Effective Properties of Random Heterogeneous Materials*: presented for the *Texas A&M Commerce Mathematics Department Student/Faculty Seminar Series*, held at Commerce, TX, October 8, 1997, 3:30 PM.
4. *Portfolio Survival with Stochastic Volatility Under Discrete Time*, presented for *Daniel H. Wagner Associates*, held at Malvern, PA, May 18, 2000, 11:30 AM.
5. *Applying Stochastic Geometry to Problems in Random Materials*: presented for the *University of Glasgow Statistics Seminar Programme*, held at the University of Glasgow, Scotland, June 6, 2001, 3:00 PM.
6. *The Mathematics of Music and Language*, presented for the *North Texas Area Association of Advancement Placement Math Teachers*, held in Dallas, TX, February 9, 2010, 6 PM.
7. *The Mathematics of Music and Language*, presented for the *University of Central Oklahoma College of Science and Mathematics Seminar Series*, held in Edmond, OK, November 4, 2010, 4 PM.
8. *Torricelli's Law*, presented for the *North Texas Area Association of Advancement Placement Math Teachers*, held in Dallas, TX, February 15, 2011, 6 PM.

Service

AWARDS

UNT President's Council University Service Award, 2010.
UNT Department of Mathematics Faculty Service Award, 2012.

REFEREE

1. Acta Materiala
2. Applied Mathematical Modeling
3. Computational Statistics and Data Analysis
4. Comptes Rendus
5. Department of Energy, Office of Basic Energy Services
6. Food Science and Technology
7. Industrial and Engineering Chemistry Research
8. Journal of Applied Crystallography
9. Journal of the Mechanics and Physics of Solids
10. Journal of Physics: Condensed Matter
11. Mechanics of Materials
12. Modelling and Simulation in Materials Science and Engineering
13. National Science Foundation
14. Physica A
15. Physical Review E
16. Physical Review Letters
17. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences
18. Random Structures and Algorithms

MEMBERSHIPS

1. Mathematical Association of America, 1988-present.
2. Association of Christians in the Mathematical Sciences, 1996-present.

CONSULTING

1. Reviewer for S. Torquato, **Random Heterogeneous Materials: Microstructure and Macroscopic Properties** (Springer-Verlag, New York, 2002): 1999-2000.
2. Reviewer for the Graduate Record Examination Quantitative Exam: 2000-present.
3. Reviewer for M. L. Bittinger, **Calculus and Its Applications** (Addison-Wesley, New York, 2000): 2002.
4. Consultant for Tour Andover Controls: 2005.
5. Reviewer for M. Marder, **Research Methods** (Cambridge University Press): 2009.
6. Reviewer for E. P. Armendariz and M. L. Daniels, **Constructing Numbers: A Creative and Connected Approach** (Wiley): 2009.

UNT SERVICE

To the University

1. Library Faculty Focus Group, November 27, 1996.
2. University Representative, Nortel College Fair (Richardson, Texas), June 30, 1998.
3. Host, UIL SuperConference, September 18, 1999.

4. University Representative, Annual Meeting of the North Texas Commission (Dallas, Texas), September 22, 2000.
5. Panelist, 11th Annual Meeting of the Hispanic Friends of the University of North Texas, October 6, 2000.
6. Panelist, "What I Should Know About Graduate School," UNT College of Arts & Sciences Ambassadors program, October 29, 2001.
7. Student Evaluator, 5th Annual Texas McNair Research Conference, March 1, 2003.
8. Member, University Review Committee, 2003-2006.
9. Faculty Advisor, Eagles for Life, 2003-present.
10. Student Evaluator, 6th Annual Texas McNair Research Conference, February 21, 2004.
11. Student Evaluator, 7th Annual Texas McNair Research Conference, February 19, 2005.
12. Member, CAS Faculty Focus Group, May 11, 2005.
13. Member, CAS Undergraduate Affairs Committee, 2005-2006.
14. Member, URC Investigative Subcommittee, Fall 2005.
15. Student Evaluator, 8th Annual Texas McNair Research Conference, February 18, 2006.
16. Member, UNT Foundations of Excellence Learning Dimension Committee, 2006-2007.
17. Student Evaluator, 9th Annual Texas McNair Research Conference, February 17, 2007.
18. Panelist, "What do Award-Winning Teachers Do?," sponsored by the UNT Center for Teaching, Learning, and Assessment, October 4, 2007.
19. Student Evaluator, 10th Annual Texas McNair Research Conference, February 16, 2008.
20. Member, Faculty Senate Budget Committee, 2012-2015.
21. Member, SETE Task Force, 2014-2016.
22. Panelist, UNT NSF CAREER Roundtable, May 5, 2014.
23. Member, UNT Distinguished Teaching Professor Committee, 2015-2018.

With the College of Education

1. Co-Director, Teach North Texas, 2008-2015.
2. Member, Hiring Committee for Associate Dean for Teacher Education, 2008-2009.
3. Member, Teacher Education Council, 2008-2015.
4. Member, Teacher Education Council Executive Committee, 2009-2010.
5. Member, College of Education Assessment Committee, 2009-2015.
6. Member, STEM Education Director Cluster Hiring Committee, 2010-2011.
7. Member, Dean Evaluation Committee, 2013.

To TAMS

1. *Incoming Students*
 - a. Panelist, TAMS Preview Day, December 4, 1997.
 - b. Panelist, TAMS Preview Day, October 1, 1998.
 - c. Panelist, TAMS Preview Day, October 14, 1999.
 - d. Panelist, TAMS Preview Day, November 12, 1999.
 - e. Faculty Interviewer, TAMS Interview Day, January 26, 2001.
 - f. Faculty Interviewer, TAMS Interview Day, March 9, 2001.
 - g. Faculty Interviewer, TAMS Interview Day, March 16, 2001.
 - h. Member, TAMS Selection Committee, 2002-2014, 2015-2016 (Chair 2013-2014)
2. *Summer Orientation*
 - a. Panelist, 1997 TAMS Summer Orientation, June 13, 1997.
 - b. Panelist, 1998 TAMS Summer Orientation, June 5, 1998.

- c. Proctor, 1999 TAMS Summer Orientation, June 1999.
- d. Proctor, 2000 TAMS Summer Orientation, June 2000.
- e. Proctor and Discussion Group Leader, 2001 TAMS Summer Orientation, June 15-16, 2001.
- f. Proctor, 2002 TAMS Summer Orientation, June 15, 2002.
- g. Proctor, 2003 TAMS Summer Orientation, June 14, 2003.
- h. Proctor, 2004 TAMS Summer Orientation, June 12, 2004.
- i. Proctor, 2005 TAMS Summer Orientation, June 11, 2005.
- j. Proctor, 2006 TAMS Summer Orientation, June 10, 2006.
- k. Proctor, 2007 TAMS Summer Orientation, June 9, 2007.
- l. Proctor, 2008 TAMS Summer Orientation, June 8, 2008.
- m. Proctor, 2009 TAMS Summer Orientation, June 13, 2009.
- n. Proctor, 2010 TAMS Summer Orientation, June 12, 2010.
- o. Proctor, 2011 TAMS Summer Orientation, June 11, 2011.
- p. Proctor, 2012 TAMS Summer Orientation, June 9, 2012.
- q. Proctor, 2013 TAMS Summer Orientation, June 8, 2013.

3. *Moving-In Day*

- a. Volunteer, TAMS Moving-In Day, August 30, 1997.
- b. Volunteer, TAMS Moving-In Day, August 29, 1998.
- c. Volunteer and Discussion Group Leader, TAMS Moving-In Day, August 26, 1999.
- d. Volunteer and Discussion Group Leader, TAMS Moving-In Day, August 24, 2000.
- e. Volunteer and Discussion Group Leader, TAMS Moving-In Day, August 23, 2001.
- f. Volunteer and Discussion Group Leader, TAMS Moving-In Day, August 22, 2002.
- g. Volunteer and Discussion Group Leader, TAMS Moving-In Day, August 21, 2003.
- h. Volunteer, TAMS Moving-In Day, August 25, 2005.
- i. Volunteer, TAMS Moving-In Day, August 24, 2006.

4. *Fall Convocation*

- a. Presenter, September 10, 2000.
- b. Presenter, September 9, 2001.
- c. Presenter, September 8, 2002.
- d. Presenter, September 7, 2003.
- e. Presenter, September 12, 2004.
- f. Presenter, September 11, 2005.
- g. Presenter, September 10, 2006.
- h. Presenter, September 9, 2007.
- i. Presenter, September 7, 2008.
- j. Presenter, September 13, 2009.
- k. Presenter, September 12, 2010.
- l. Presenter, September 11, 2011.
- m. Presenter, September 9, 2012.
- n. Presenter, September 8, 2013.

5. *Recommendations*

- a. During the 1997-1998 academic year, I wrote 128 letters of recommendation for 26 students.
- b. During the 1998-1999 academic year, I wrote 72 letters of recommendation for 22 students.
- c. During the 1999-2000 academic year, I wrote 120 letters of recommendation for 40 students.
- d. During the 2000-2001 academic year, I wrote 116 letters of recommendation for 28 students.
- e. During the 2001-2002 academic year, I wrote 97 letters of recommendation for 33 students.
- f. During the 2002-2003 academic year, I wrote 152 letters of recommendation for 34 students.
- g. During the 2003-2004 academic year, I wrote 182 letters of recommendation for 39 students.

- h. During the 2004-2005 academic year, I wrote 120 letters of recommendation for 41 students.
- i. During the 2005-2006 academic year, I wrote 160 letters of recommendation for 35 students.
- j. During the 2006-2007 academic year, I wrote 150 letters of recommendation for 50 students.
- k. During the 2007-2008 academic year, I wrote 152 letters of recommendation for 42 students.
- l. During the 2008-2009 academic year, I wrote 95 letters of recommendation for 21 students.

6. *Commencement*

- a. Faculty Marshall, May 15, 1998.
- b. Faculty Marshall, May 14, 1999.
- c. Faculty Marshall, May 12, 2000.
- d. Faculty Marshall, May 11, 2001.
- e. Faculty Marshall, May 10, 2002.
- f. Faculty Marshall, May 9, 2003.
- g. Faculty Marshall, May 7, 2004.
- h. Commencement Speaker, May 13, 2005.
- i. Faculty Marshall, May 12, 2006.
- j. Faculty Marshall, May 11, 2007.
- k. Faculty Marshall, May 9, 2008.
- l. Faculty Marshall, May 15, 2009.
- m. Faculty Marshall, May 14, 2010.
- n. Faculty Marshall, May 13, 2011.
- o. Faculty Marshall, May 11, 2012.
- p. Faculty Marshall, May 10, 2013.

7. *Other*

- a. Greeter, TAMS Family Weekend, November 8, 1997.
- b. Member, TAMS Disiplinary Appeal Committee, February 8, 1999.
- c. Member, TAMS Disciplinary Appeal Committee, May 18, 2010.
- d. Member, TAMS Disciplinary Appeal Committee, November 12, 2010.

To the Mathematics Department

1. *Course Coordinator*

- a. Course Coordinator, TAMS, 1999-2007.
- b. Course Coordinator, Math 1680-1780, 1999-2000, 2008-09.
- c. Course Coordinator, Math 1010, 2004-2006.

2. *Standing Departmental Committees*

- a. Member, Undergraduate Affairs Committee, 1998-1999, 2005-present (Chair 2006-2009).
- b. Member, Computer Committee, 1998-1999, 2000-2001.
- c. Member, Space Committee, 1999-2000, 2001-2005 (Chair 2003-2005).
- d. Member, Real Analysis Qualifying Exam Committee, 1999-2000.
- e. Member, Complex Analysis Qualifying Exam Committee, 2000-2009.
- f. Member, Scholarship/Selection Committee, 2003-2005.
- g. Member, Industry Relations Committee, 2006-2007.
- h. Member, Executive Committee, 2008-2009, 2014-2016.
- i. Member, Lecturer Executive Committee, 2009, 2012-2013.
- j. Member, Probability/Statistics Qualifying Exam Committee, 2010-present (Chair 2015-2016).

3. *Textbook Committees*

- a. Member, Math 1680 Textbook Committee, February 1998.

- b. Chair, Math 1710/1720/2730 Textbook Committee, 2000.
- c. Member, Math 1680 Textbook Committee, March 2003.
- d. Member, Math 1710/1720/2730 Textbook Committee, March 2005.
- e. Member, Math 1010 Textbook Committee, February 2007.
- f. Member, Math 1680 Textbook Committee, March 2007.

4. *Grade Appeal Committees*

- a. Member, Grade Appeal Committee, February 2000.
- b. Member, Grade Appeal Committee, February 2001.
- c. Member, Grade Appeal Committee, May 2001.
- d. Chair, Grade Appeal Committee, February 2002.
- e. Member, Grade Appeal Committee, June 2005.
- f. Member, Grade Appeal Committee, July 2008.

5. *Hiring Committees*

- a. Member, Lecturer Hiring Committee, August 2006.
- b. Member, Applied Probability/Statistics Hiring Committee, 2006-2007.
- c. Member, Applied Probability/Statistics Hiring Committee, 2009-2010.
- d. Member, Lecturer Hiring Committee, 2009-2010.
- e. Member, Statistics Hiring Committee, 2011-2012.
- f. Member, Lecturer Hiring Committee, 2012.
- g. Member, Statistics Hiring Committee, 2015-2016

6. *Other*

- a. Coordinator, Mathematics Awareness Week, 1997-1999.
- b. Faculty Advisor, UNT Mathematical Contest in Modeling teams, 2000-2001.
- c. Chair, Applied Statistics Subcommittee, Fall 2004.
- d. Co-Undergraduate Advisor, 2007-present.
- e. Program Director for Certificate in Actuarial Science, 2009-2013.
- f. Peer Teaching Evaluator, November 2009.
- g. Shelton Teaching Award Nomination Committee, February 2014.

OTHER SERVICE

- 1. Judge, Lee Elementary Science Fair, January 29, 2009.
- 2. Member, UTeach Professional Association Advisory Committee, 2013-2014.
- 3. Co-Coordinator, Woodrow Wilson Elementary Science Fair, 2013-2015.
- 4. Presenter, Denton Public Library Pi Day Activities, March 14, 2015.
- 5. Coach, Denton Calvary Academy AMC8 and Mathcounts Teams, 2015-2018.
- 6. Member, THECB Undergraduate Education Advisory Committee, 2016-2018.