

KRISTEN S. MOORE

Department of Mathematics
University of Michigan
530 Church Street
Ann Arbor, MI 48109-1043

phone: 734 615 6864
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ksmoore@umich.edu
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EDUCATION AND EMPLOYMENT HISTORY

- *Associate Professor*, Department of Mathematics, University of Michigan (September 2007 – present)
- *Assistant Professor*, Department of Mathematics, University of Michigan (September 2001 – August 2007)
- *Three-year Assistant Professor*, Department of Mathematics, University of Michigan (September 1999 – August 2001)
- *Ph.D. in Mathematics*, University of Connecticut, Advisor: P.J. McKenna (June 1999)
- *M.S. in Mathematics*, University of Connecticut (June 1996)
- *Associate of the Society of Actuaries* (1992); Passed the SOA examinations for Courses 5 and 6 (2003)
- *Actuarial Associate*, CIGNA Companies, Hartford, CT (1990-1994)
- *B.S. in Mathematics*, Magna Cum Laude, Bucknell University (June 1990)

CURRENT RESEARCH

Differential Equations

- Theoretical and numerical investigation of differential equations that arise in financial and actuarial mathematics.
- Theoretical and numerical investigation of periodic solutions to systems that model oscillations in suspension bridges.

PUBLICATIONS

Actuarial and Financial Mathematics

- [1] K. S. Moore and V. R. Young. Pricing equity-linked endowments via the principle of equivalent utility. *Insurance: Mathematics and Economics*, **33** (2003), no. 3, 497-516.
- [2] K. S. Moore and V. R. Young. Optimal design of a perpetual equity-indexed annuity. *North American Actuarial Journal*, **9** (2005), no. 1, 57-72.
- [3] M. A. Milevsky, K. S. Moore, and V. R. Young. Asset allocation and annuity-purchase strategies to minimize the probability of financial ruin. *Mathematical Finance*, **16** (2006), no.4, 647-671.
- [4] K. S. Moore and V. R. Young. Optimal insurance in a continuous-time model. *Insurance: Mathematics and Economics*, **39** (2006), no.1, 47-68.
- [5] K. S. Moore and V. R. Young. Optimal and simple, nearly-optimal rules for minimizing the probability of ruin in retirement. *North American Actuarial Journal*, **10** (2006), no. 4, 145-161.
- [6] K. S. Moore. Optimal surrender strategies for equity-indexed annuity investors. *Insurance: Mathematics and Economics*, **44** (2009), no. 1, 1-18.
- [7] E. Bayraktar, K. S. Moore, and V. R. Young. Minimizing the probability of lifetime ruin under random consumption. *North American Actuarial Journal*, **12** (2008), no. 4, 384-400.

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PUBLICATIONS (Continued)

Nonlinear Wave and Nonlinearly Coupled Beam-Wave Equations

- [8] P. J. McKenna and K. S. Moore. Mathematics arising from suspension bridge dynamics: recent developments. *Jahresbericht der Deutschen Mathematiker-Vereinigung*, **101** (1999), no. 4, 178-195.
- [9] P. J. McKenna and K. S. Moore. Multiple periodic solutions to a suspension bridge ordinary differential equation. *Proceedings of the Conference on Nonlinear Differential Equations (Coral Gables, FL, 1999)*, *Electronic Journal of Differential Equations Conference*, **5** (2000) 183-199.
- [10] K. S. Moore. Large torsional oscillations in a suspension bridge: multiple periodic solutions to a nonlinear wave equation. *SIAM Journal on Mathematical Analysis*, **33** (2002), no. 6, 1411-1429.
- [11] P. J. McKenna and K. S. Moore. The global structure of periodic solutions of a suspension bridge mechanical model. *IMA Journal of Applied Mathematics*, **67** (2002), no. 5, 459-478.
- [12] N. Ben-Gal and K. S. Moore. Bifurcation and stability properties of periodic solutions to two nonlinear spring-mass systems. *Nonlinear Analysis. Theory, Methods and Applications*, **61** (2005), no. 6, 1015-1030.

Singular Elliptic Problems

- [13] S. Hill and K. S. Moore. An existence theorem for a quasilinear elliptic boundary value problem with boundary blowup. *Nonlinear Analysis. Theory, Methods, and Applications*, **38** (1999), no. 8, 951-958.
- [14] S. Hill, K. S. Moore, and W. Reichel. Existence and uniqueness theorems for quasilinear elliptic boundary value problems. *Proceedings of the American Mathematical Society*, **128** (2000), no. 6, 1673-1683.

Other

- [15] A. J. Stewart and K. S. Moore. Advancing women in science at the University of Michigan: Faculty recruitment, retention, and leadership. *Submitted for publication*.

RECOGNITION AND AWARDS

- *Class of 1923 Memorial Teaching Award*, College of Literature, Science and the Arts, University of Michigan, 2007
- *CKER Grant*, Society of Actuaries, March 2005
- *Excellence in Education Award*, College of Literature, Science, and the Arts, University of Michigan, December 2003
- *Elizabeth Caroline Crosby Research Award*, University of Michigan, June 2002
- *Postdoctoral Research Fellowship*, American Association of University Women, 2001-2002
- *Officer's Grant*, Alfred P. Sloan Foundation, 2001
- *Rackham Fellowship*, Rackham School of Graduate Studies, University of Michigan, 2001
- *Project NExT Fellow (New Experiences in Teaching)* (1999-2000)
- *Constance Strange Graduate Community Award* (May 1999) University of Connecticut
- *Louis DeLuca Fellowship for Outstanding Teaching* (May 1997) University of Connecticut
- *Award for Outstanding Scholarship in Mathematics* (June 1990) Bucknell University

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STUDENTS SUPERVISED

Georgios Vasileiou Dalakouras, Ph.D. 2004
Nitsan Ben-Gal, Undergraduate research project (2003-2004)

DISSERTATION COMMITTEES

Bo Yang, Ph.D. 2008
Jungmin Choi, Ph.D. 2005
Georgios Vasileiou Dalakouras, Ph.D. 2004 (Chair)
Sara Faridi, Ph.D. 2000
John Robertson, Ph.D. 2000

TALKS

1. *Special Session on Mathematics of Insurance*, SIAM Conference on Financial Mathematics and Engineering (July 2006)
2. *Actuarial Research Day*, University of Western Ontario and the Fields Institute (June 2006)
3. *Annual Meeting, Michigan Section of the Mathematical Association of America* (May 2006)
4. *Colloquium*, Albion College (May 2006)
5. *Special Session on Models That Work: Building Diversity in Advanced Mathematics*, Presentation on University of Michigan's ADVANCE Project, Joint Mathematics Meetings (January 2006)
6. Contributed Paper, Joint Mathematics Meetings (January 2006)
7. *Actuarial and Financial Mathematics Seminar*, University of Michigan (November 2005)
8. *Special Session on Finance and Stochastics*, INFORMS Annual Meeting (November 2005)
9. *Ninth International Congress on Insurance: Mathematics, and Economics* (July 2005)
10. *Special Session on Mathematics of Actuarial Finance*, Canadian Mathematical Society (June 2005)
11. *Actuarial and Financial Mathematics Seminar*, University of Michigan (March 2005)
12. *Actuarial and Financial Mathematics Seminar*, University of Michigan (September 2004)
13. *Actuarial Research Conference*, University of Iowa (August 2004)
14. *Bachelier Finance Society Third World Congress*, University of Illinois at Chicago (July 2004)
15. *Eighth International Congress on Insurance: Mathematics, and Economics* (June 2004)
16. *Pi Mu Epsilon Induction*, Kenyon College (May 2004)
17. *Conference on Asset Allocation and Mortality*, Individual Finance and Insurance Decisions (IFID) Centre and the Fields Institute for Research in Mathematical Sciences (April 2004)
18. *Actuarial and Financial Mathematics Seminar*, University of Michigan (March 2004)
19. *Actuarial Research Conference*, University of Michigan (August 2003)
20. *VIGRE Working Group in Scientific Computing*, University of Michigan (March 2003)
21. *VIGRE Graduate Student Seminar*, University of Michigan (March 2003)
22. *Actuarial and Financial Mathematics Seminar*, University of Michigan (February 2003)
23. *Actuarial and Financial Mathematics Seminar*, University of Michigan (October 2002)
24. *Actuarial Research Conference*, University of Waterloo (August 2002)
25. *Association for Women in Mathematics Workshop and SIAM Annual Meeting* (July 2002)
26. *Partial Differential Equations Seminar*, University of Minnesota (March 2002)

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TALKS (Continued)

27. *Mississippi State Conference on Differential Equations and Computational Simulations* (May 2001)
28. *Midwest Partial Differential Equations Conference* (April 2001)
29. *Undergraduate Mathematics Club*, University of Michigan (January 2001)
30. Contributed Paper, Joint Mathematics Meetings (January 2001)
31. *Pi Mu Epsilon Colloquium*, Western Michigan University (November 2000)
32. *Special Session on History of Mathematics*, AMS Western Region Meeting (October 2000)
33. *Advanced Placement Calculus Classes*, Pennsbury High School (May 2000)
34. *Special Session on Topological and Variational Methods in Nonlinear Differential Equations*, International Conference on Dynamical Systems and Differential Equations (May 2000)
35. Contributed Paper, Joint Mathematics Meetings (January 2000)
36. *Differential Equations Seminar*, University of Michigan (October 1999)
37. Contributed Paper, Joint Mathematics Meetings (January 1999)
38. *Colloquium*, Bucknell University (November 1998)
39. *Undergraduate Colloquium*, University of Connecticut (November 1998)
40. *Colloquium*, Rhode Island College (October 1998)
41. *Future Colleagues Session*, Mathematical Association of America, Northeast Section Meeting (June 1998)
42. *Partial Differential Equations Seminar*, University of Connecticut (April 1998)
43. *Dynamical Systems Seminar*, Boston University (April 1998)
44. *Graduate Student Poster Session*, Association for Women in Mathematics Workshop (July 1997)

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TEACHING EXPERIENCE

Department of Mathematics, University of Michigan (*September 1999 - present*)

- *Class of 1923 Memorial Teaching Award*, College of Literature, Science and the Arts, University of Michigan, 2007
- *Excellence in Education Award*, College of Literature, Science, and the Arts, University of Michigan, December 2003
- Taught Introductory Probability, Mathematics of Finance, Introductory Calculus, Compound Interest and Life Insurance, Boundary Value Problems for Partial Differential Equations, Fourier Analysis and Its Applications, and Life Contingencies. Used graphing calculators, *Maple*, *Matlab*, and *Excel* in many of the courses to enrich students' understanding of course material.
- Curriculum advisor for the undergraduate concentrations in Actuarial Mathematics and Financial Mathematics; students in these concentrations comprise approximately one-third of the total number of undergraduate concentrators in Mathematics. Advised Master's students focusing on Actuarial Mathematics.
- Supervised one Ph.D. student (2004) and one undergraduate research student (2003-2004).
- Taught three Directed Reading and Research (Math 700) courses (2002-2003).

Department of Mathematics, University of Connecticut (*September 1994 – May 1999*)

- *Teaching Assistant (Fall 1994 - May 1999)* Instructor for undergraduate courses in Calculus, Differential Equations, Theory of Interest, Problem Solving, Business Calculus, and Basic Algebra. Responsible for lecturing as well as creating and grading quizzes, exams and projects. Served as assistant coordinator for several multi-section courses. Taught Technology Enhanced Business Calculus, Multivariable Calculus, and Differential Equations.
- *Coordinator for Multi-Section Basic Algebra (Fall 1996)* Determined syllabus, established course policy, created exams, and supervised a staff of eight teaching assistants for a multi-section Basic Algebra course.
- *Pre-Collegiate Summer Program Instructor (Summers 1995, 1996, 1997)* Taught Basic Algebra and Problem Solving as part of a TRIO program. TRIO is federally and state funded initiative designed to help students overcome class, social, and cultural barriers to higher education.

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SERVICE TO THE DEPARTMENT AND UNIVERSITY

- Curriculum Committee, College of Literature, Science, and the Arts, University of Michigan (Fall 2007)
- Presentation: *NSF ADVANCE at the University of Michigan*, Joint Mathematics Meetings (2006)
- Undergraduate Counseling Committee, Mathematics Department, University of Michigan (2003-present)
- Preliminary Examination Committee, Applied and Interdisciplinary Mathematics Program, Mathematics Department, University of Michigan (2004-present)
- Co-organizer, Actuarial and Financial Mathematics Seminar, Mathematics Department, University of Michigan (2003-2006)
- Host, King/Chavez/Parks (KCP) College Visitation Day, Office of Academic Multicultural Initiatives, University of Michigan (2003-2005)
- Junior Women Faculty Network Steering Committee, University of Michigan (2002-2006)
- Executive Committee, Mathematics Department, University of Michigan (2002-2003)
- Faculty Mentor, University of Michigan Mentorship Program, Office of New Student Programs (2002-2003)
- Advisor, Actuarial Fraternity, University of Connecticut (1998-1999)
- Co-founder, UConn's Association for Women in Mathematics (1998)
- Graduate Student Seminar Organizer, University of Connecticut (1995)
- Graduate Student Senator, University of Connecticut (1995-1996)

SERVICE TO THE MATHEMATICS PROFESSION

- Organizing Committee, Association for Women in Mathematics workshop held in conjunction with the Society for Industrial and Applied Mathematics annual meeting (2006)
- Committee on the Participation of Women, Mathematical Association of America (2002-2008)
- Session Organizer, *Improving the Persistence of Women in Graduate School*, Joint Mathematics Meetings (January 2003)
- Master Program Committee, Society for Industrial and Applied Mathematicians (2002-2003)
- Committee on the Profession, Mathematical Association of America (2001-2004)
- Judge, Undergraduate Student Poster Session, Mathematical Association of America (2001-2003)
- Referee:
 - North American Actuarial Journal
 - Journal of Pension Economics and Finance
 - Journal of Insurance Issues
 - Journal of Mathematical Analysis and Applications
 - Journal of Computational and Applied Mathematics

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ACTUARIAL EXPERIENCE

Actuarial Instructor and Advisor

Department of Mathematics, University of Michigan (September 1999 – present)

Department of Mathematics, University of Connecticut (Fall 1997, Fall 1998)

Actuarial Associate

CIGNA Companies, Hartford, CT (August 1990 - August 1994)

Provided actuarial support in CIGNA's Health Care, Individual Financial Services, and Group Pension divisions. Priced innovative managed health care products and group single premium annuities. Analyzed and enhanced division's methodology for reporting gains by product.

Associate of the Society of Actuaries (1992)

Completed the series of examinations that leads to the ASA designation (1992). Passed the Course 5 and Course 6 examinations (2003).