

Scott A. Cook

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Education

Washington University in St. Louis, St. Louis, Missouri

- **Ph.D. Mathematics**, May 2011
 - Dissertation Topic: “Markov Chains Derived From Lagrangian Mechanical Systems”
 - Advisor: Renato Feres
- **M.A. Mathematics**, August 2007

Southern Nazarene University, Bethany, OK, 1998-2002

- **B.S. Summa Cum Laude**, Physics and Chemistry, May 2002
- **B.S.**, multidisciplinary - Mathematics, Psychology, Philosophy, December 2002

Teaching

Swarthmore College

- *Math 25, Further Single Variable Calculus*, Fall 2011
- *Math 33, Basic Several Variable Calculus*, Fall 2011

Washington University in St. Louis

Dean’s Award for Excellence in Teaching, Grad School of Arts & Sciences, 2007

Teaching Citation, Graduate School of Arts and Sciences, December, 2010

Instructor: Duties included choosing textbooks, designing syllabi, writing and grading homework and exams, lecturing and leading class discussions, and holding office hours.

- *Math 1011, Introduction to Statistics*, Summer 2011
- *Math 130, Calculus I for Freshman Summer Academic Program*, Summer 2008
- *Math 130, Calculus I for Freshman Summer Academic Program*, Summer 2007
 - FSAP is a five week, on campus summer enrichment program for incoming freshmen
- *Math 220, Finite Mathematics*, Summer 2006 - team taught with Michael Brad Henry

Teaching Assistant: Duties included leading recitation sections, grading quizzes and exams, and holding office hours.

- *Math 131, Calculus I*, Fall 2008
- *Math 217, Differential Equations*, Fall 2007
- *Math 233, Multivariable Calculus*, Spring 2007
- *Math 128, Calculus II for the Life, Social, and Managerial Sciences*, Spring 2006
- *Math 132, Calculus II*, Spring 2006
- *Math 131, Calculus I*, Fall 2005

Grader: Duties included grading homework sets.

- *Math 418, Introduction to Topology and Modern Analysis II*, Spring 2010
- *Math 5042, Geometry II (Graduate qualifier in Riemannian Geometry)*, Spring 2010

Math Education Discussion Group, participant, Summer 2005

Research Interests

- Probability
- Random dynamical systems
- Random methods in combinatorics

Papers

- “Random Billiards with Wall Temperature and Associated Markov Chains” - in preparation
- “Probabilistic Models for Gas-Surface Interactions and Thermalization - a numerical study” - in preparation
- “An FPGA module for High Speed Data Collection in Nuclear Chemistry Experiments” - REU report, summer 2001
- “Toward a Photochromatic Derivative of Cymatrene” - REU report, summer 2000
- “Pressure Amorphization Studies in Zirconium Tungstate” - REU report, summer 1999

Presentations

- “Mathematics of the Bad Bounce,” Haverford-Bryn Mawr Bi-College Mathematics Colloquium, October 31, 2011
- “Markov Chains from Billiards,” Graduate Colloquium WUSTL, June 15, 2011
- “Markov Chains Derived From Lagrangian Mechanics,” WUSTL, April 28, 2011
- “Billiard Markov Models,” Swarthmore College, March 17, 2011
- “Markov Mechanics,” Utica College, February 22, 2011

Combinatorics Seminar - Washington University in St. Louis

- “Billiard Models from Markov Chains,” November 3, 2010
- “Hyperplane Arrangements and Card Shuffling,” December 8, 2009
- “Trailing the Dovetail Shuffle to its Lair, part 2,” December 1, 2009
- “Trailing the Dovetail Shuffle to its Lair, part 1,” November 17, 2009
- “Introduction to Card Shuffling, part 2,” April 17, 2009
- “Introduction to Card Shuffling, part 1,” April 9, 2009
- “A Greedy but Good Graph Coloring Algorithm,” February 12, 2009
- “Homology of a Random Clique Complex,” November 30, 2008
- “Building Triangle Free Graphs,” May 1, 2008
- “Introduction to the Probabilistic Method,” February 28, 2008

Graduate Geometry of Physics Reading Group - Washington University in St. Louis

- “Holonomic Constraints,” October 23, 2007
- “Tensors,” September 18, 2007

Graduate Mathematical Physics Reading Group - Washington University in St. Louis

- “Introduction to Quantum Mechanics,” July 11, 2007
- “Maxwell’s Equations,” June 13, 2007
- “The Inertia Tensor,” May 23, 2007

Presentations to Undergraduate and High School Students

- “How Tom Hanks Destroyed an Island or It’s Just Common Knowledge,” Math Circles at WUSTL, February 13, 2011
- “Trailing the Dovetail Shuffle to its Lair,” WUSTL Undergraduate Math Club, October 27, 2009

- “The Monty Hall Problem,” Math Circles at the Youth Technology and Education Center, November 5, 2009
- “The Monty Hall Problem,” Math Circles at WUStL, October 19, 2008
- “The Game of Nim,” Math Circles at WUStL, February 10, 2008
- “Cryptography,” Math Circles at WUStL, November 11, 2007
- “The Bridges of Königsberg,” Math Circles at WUStL, October 26, 2006
 - Math Circles is a mathematics enrichment program for middle and high school students

Conferences Attended

Midwest Probability Conference, Evanston, Illinois October 2011
Joint Mathematics Meetings, New Orleans, Louisiana January 2011
AMS Spring Southeastern Sectional Meeting, Lexington, Kentucky, March 2010
Combinatorics 2010: Advances, Trends, Speculation, Lexington, Kentucky, March 2010
Wash U Frontiers In Technology and Science Conference, St. Louis, MO, April 2009
Graduate Student Combinatorics Conference, Lexington, Kentucky, March 2009
Joint Mathematics Meetings, Washington, D.C. January 2009
AMS Spring Central Sectional Meeting, Bloomington, IN, April 2008

Work Experience

Visiting Assistant Professor, Swarthmore College, August 2011
Adjunct Professor of Mathematics, Washington University in St. Louis, Summer 2011
Graduate Student/Teaching Assistant/Research Assistant, Washington University in St. Louis, Fall 2004-Spring 2011
Systems Engineer II, Raytheon Company, Missile Systems Division, June 2002 - July 2004

- Reliability Engineer/Risk Manager for Tomahawk Cruise Missile 2003-2004
- Advanced Manufacturing Design - 2002

Research Experience for Undergraduates

- University of Rochester, Chemistry, Udo Schröder, Summer 2001
- University of Memphis, Chemistry, Ted Burkey, Summer 2000
- Arizona State University, Materials Research Science and Engineering Center, C. Austen Angell, Summer 1999

Tutor, 1996-present

- Extensive private and school-sponsored tutoring in mathematics, chemistry, and physics

Lab Assistant, Southern Nazarene University , 1999-2002

- General Chemistry 1999-2000, Organic Chemistry 2000-01, General Physics 2001-02

Fellowships and Scholarships

Washington University in St. Louis, St. Louis, Missouri

- Dissertation Fellowship, Fall 2010 - Spring 2011
- Research Assistantship, Fall 2009
- Research Fellowship, Spring 2008
- University Fellowship, Fall 2004 - Spring 2005

Southern Nazarene University, Bethany, OK

- SNU Merit Scholarship, 1998-2002, full tuition, room and board

Professional Activities

Guido Weiss Award Committee, Member, WUSTL, Spring 2011

American Mathematical Society, Member, 2004-present

Society of Physics Students, Member 1999-2002, President 2001-02, Vice-president 2000-01

Mortar Board Honor Society, inducted 2000, Alumni officer 2001-02

Sigma Pi Sigma - Physics Honor Society, inducted 2000

Psi Chi - Psychology Honor Society, inducted 2000

American Chemical Society, Member, 1999-2002

American Physical Society, Member, 2000-2002

Science Bowl, 1997-98

- Captain of state championship team, 1998
- Representative to national competition, 1998
- Captain of state runner up team, 1997