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### **Academic Position**

2004-present, Associate Professor, Department of Mathematics, CSU San Marcos

1999-2004, Assistant Professor, Department of Mathematics, CSU San Marcos

### **Consulting Positions**

2004-2005, Special Consultant to the CSU Office of the Chancellor: Mathematics Content Expert

*Project:* Develop CSU Math Success Website, <http://www.csumathsuccess.org/>

Spring 2004, McGraw-Hill Higher Education

*Project:* ALEKS Faculty Professional Development Program

Summer 2003, Institute for Defense Analysis Center for Communications Research

*Project:* SCAMP Participant

Summer 2003, ALEKS Corporation

*Project:* Develop CSU Entry-Level Mathematics Exam Preparation Curriculum

### **Education**

1998, Ph.D. in Mathematics, UCLA Department of Mathematics

*Thesis Advisor:* Professor Thomas M. Liggett

*Dissertation Title:* A Reversible Interacting Particle System on the Homogeneous Tree

*Honors:* 1997 UCLA Chancellor Charles & Sue Young Graduate Student Award; 1997

Robert Sorgenfrey Distinguished Teaching Assistant Award Recipient; 1997-1998 UCLA

Dissertation Year Fellow; 1994-97 UCLA Eugene V. Cota Robles Fellow; 1994 Women's

University Club Merit Scholarship Recipient; 1993-1994 UCLA Graduate Opportunity Fellow.

1995, M.A. in Mathematics, UCLA Department of Mathematics

1993, B.S. in Mathematics, UCSD Department of Mathematics

*Honors:* 1993 UCSD Muir College Scholar of the Year; 1993 Phi Beta Kappa Society Inductee; 1993 into Caledonian Honor Society Inductee.

### **Research Interests**

Probability Theory and Stochastic Processes; Stochastic Networks; Interacting Particle Systems

### **Research Positions**

Summer 2005, Research Associate, Department of Mathematics, University of California San Diego

*Sponsor:* Ruth J. Williams, UCSD Department of Mathematics

*Research Topic:* Analysis of Shortest Remaining Processing Time Queues

2000-2001 & Spring 2002, National Science Foundation Mathematical Sciences Postdoctoral Research Fellow

*Mentor:* Professor Ruth J. Williams, UCSD Department of Mathematics

*Research Topic:* Analysis of Processor Sharing Queues

1998-1999, University of California Office of the President Postdoctoral Fellow

*Mentor:* Professor Ruth J. Williams, UCSD Department of Mathematics

*Research Topic:* Analysis of Processor Sharing Queues

**Publications**

- DOUGLAS DOWN, H. CHRISTIAN GROMOLL, AND AMBER L. PUHA. The fluid limit of an SRPT queue. *Preprint*.
- AMBER L. PUHA, ALEXANDER L. STOLYAR, AND RUTH J. WILLIAMS. The fluid limit of an overloaded processor sharing queue. *Mathematics of Operations Research*, 31, 316-350, 2006.
- STAN BARRICK, AMBER PUHA, AND CSU INFORMATION TECHNOLOGY SERVICES ACADEMIC TECHNOLOGY DIVISION. CSU Math Success Web. *www.csumathsuccess.org*, 2004.
- AMBER L. PUHA AND RUTH J. WILLIAMS. Invariant states and rates of convergence for the fluid limit of a heavily loaded processor sharing queue. *Annals of Applied Probability*, 14, 517-554, 2004.
- H. CHRISTIAN GROMOLL, AMBER L. PUHA, AND RUTH J. WILLIAMS. The fluid limit of a heavily loaded processor sharing queue, *Annals of Applied Probability*, 12, 797-859, 2003.
- STAN BARRICK AND AMBER PUHA. Teaching Developmental Mathematics with ALEKS: An Implementation Guide. McGraw-Hill, 2003.
- AMBER L. PUHA. Critical exponents for a reversible nearest particle system on the binary tree. *Annals of Probability*, 20(1):395–415, January 2000.
- AMBER L. PUHA. A reversible nearest particle system on the homogeneous tree. *Journal of Theoretical Probability*, 12(1):217–254, January 1999.
- J. T. CHAYES, A. L. PUHA AND T. D. SWEET. Independent and dependent percolation. In *Probability Theory and Applications*, volume 6 of *IAS/Park City Mathematics Series*, editors E. Hsu and S.R.S. Varadhan, pages 49–166, American Mathematical Society, 1999.

**Grants and Fellowships**

- 2005–2007, National Security Agency Young Investigators Grant
- Summer 2005, National Science Foundation Research at Undergraduate Institutions Grant
- Spring 2005, National Science Foundation Travel Grant
- Summer 2004, Stochastic Networks Conference Travel Grant
- Spring 2004, National Science Foundation Travel Grant
- Summer 2003, National Science Foundation Travel Grant
- Spring 2002, CSUSM Faculty Center Travel Grant
- Fall 2001, CSUSM Faculty Center Travel Grant
- 2001-02, CSUSM College of Arts and Sciences Faculty Development Grant
- 2001-02, CSUSM University Professional Development Grant
- Summer 2001, National Science Foundation Travel Grant
- Spring 2001, CSUSM Faculty Center Travel Grant
- 1999-2002, National Science Foundation Mathematical Sciences Postdoctoral Fellowship
- 1998-99, University of California Office of the President Postdoctoral Fellowship

**Invited Presentations/Workshop Participation**

- 2005, Stanford University Department of Mathematics Probability Colloquium, Palo Alto, CA  
*Title:* A Reversible Interacting Particle System on the Binary Tree
- 2005, 13<sup>th</sup> Informs Applied Probability Society Meeting, Ottawa, CN  
*Session Title:* Queues with Time-Varying Inputs  
*Lecture Title:* The Fluid Limit of an Overloaded Processor Sharing Queue
- 2005, 8<sup>th</sup> Annual Legacy of R.L. Moore Conference, Austin, TX
- 2004, Sharp Thresholds for Mixing Times Workshop, American Institute of Mathematics Research Conference Center, Palo Alto, CA

**Invited Presentations/Workshop Participation (Continued)**

- 2004, 8<sup>th</sup> Annual California Mathematics Counsel, Community Colleges Recreation Mathematics Conference. Reno, NV  
*Title:* An Introduction to the Mathematics of Pricing Stock Options
- 2004, 3<sup>rd</sup> CSU/ALEKS Summit, CSUSM  
*Title:* Using Content Driven Objectives to Pace Student Learning
- 2003, 10<sup>th</sup> Anniversary Program for Women in Mathematics Reunion Celebration, Institute for Advanced Study, Princeton, New Jersey  
*Title:* A Heavy Traffic Analysis of a Processor Sharing Queue
- 2003, 2<sup>nd</sup> CSU/ALEKS Summit, CSULB  
*Title:* Using ALEKS in a Lecture/Lab Format
- 2003, University of Michigan, Industrial and Operations Engineering Department Colloquium  
*Title:* A Heavy Traffic Analysis of a Processor Sharing Queue
- 2003, UCSD Department of Mathematics Probability Seminar  
*Title:* A Strictly Supercritical Fluid Model for an Overloaded Processor Sharing Queue
- 2002, American Mathematical Society Fall Midwest Sectional Meeting, Madison, Wisconsin  
*Title:* A Strictly Supercritical Fluid Model for an Overloaded Processor Sharing Queue
- 2002, Project NExT Colloquium, MathFest, Burlington, VT
- 2002, Project NExT Colloquium, The Joint Mathematics Meetings, San Diego, CA
- 2002, UCLA Department of Mathematics Probability Seminar  
*Title:* A Strictly Supercritical Fluid Model for an Overloaded Processor Sharing Queue
- 2001, INFORMS Annual Meeting, Miami, Florida  
*Session Title:* Queueing Systems in Heavy Traffic  
*Lecture Title:* Asymptotic Behavior of Fluid Limit for Heavily Loaded Processor Sharing Queues
- 2001, 11<sup>th</sup> INFORMS Applied Probability Society Conference, New York  
*Session Title:* Fluid and Diffusion Approximations of Queues  
*Lecture Title:* The Fluid Limit of an Overloaded Processor Sharing Queue
- 2001, UCI Department of Mathematics Probability Seminar  
*Title:* A Fluid Model for a Processor Sharing Queue
- 2001, MATH Colloquium, Sonoma State University Department of Mathematics, California  
*Title:* Probabilistic Models of Queueing Systems
- 2000, UCSD Department of Mathematics Probability Seminar  
*Title:* Rates of convergence in the Key Renewal Theorem
- 2001, Project NExT Colloquium, MathFest, Madison, Wisconsin
- 2000, UCSD Department of Mathematics Probability Seminar  
*Title:* Analysis of Fluid Models for Processor Sharing Queues
- 1999, Mathematical Association of America Regional Meeting, Orange, California  
*Title:* Analysis of Fluid Models for Processor Sharing Queues
- 1999, Joint American/Australian Mathematical Society Meeting, Melbourne, Australia  
*Title:* A Reversible Interacting Particle System on the Binary Tree
- 1998, USC Department of Mathematics Probability Seminar  
*Title:* Critical Exponents for a Reversible Interacting Particle System on the Binary Tree
- 1998, UCSD Department of Mathematics Probability Seminar  
*Title:* Critical Exponents for a Reversible Interacting Particle System on the Binary Tree
- 1998, UCLA Department of Mathematics Probability Seminar  
*Title:* A Reversible Interacting Particle System on the Binary Tree

**Invited Presentations/Workshop Participation (Continued)**

1998, Peperdine University Department of Mathematics

*Title:* The Gambler's Ruin Problem

1997, Center for Communications Research, San Diego, California

*Title:* A Reversible Interacting Particle System on the Binary Tree

1997, Institute of Mathematical Statistics Annual Meeting, Anaheim, California

*Title:* A Reversible Interacting Particle System on the Binary Tree

**Contributed Presentations/Workshop Participation**

2005, 30<sup>th</sup> Conference on Stochastic Processes and their Applications, UCSB

*Title:* The Fluid Limit of an Overloaded Processor Sharing Queue

2004, Cal State San Marcos, Department of Mathematics

*Title:* The Padres Hope(lessnes)s for Making the 2004 Playoffs

2004, Cal State San Marcos, Department of Mathematics

*Title:* An Introduction to the Mathematics of Pricing Stock Options

2003, Conference on Stochastic Processes and their Applications, Rio de Janero, Brasil

*Title:* A Stricly Supercritical Fluid Model for an Overloaded Processor Sharing Queue

2001, 27th Conference on Stochastic Processes and their Applications, Cambridge, England

*Title:* A Fluid Model for a Processor Sharing Queue

2000, INFORMS Annual Meeting, San Antonio, Texas

*Title:* A Fluid Model for a Processor Sharing Queue

2000, Conference and Workshop on Stochastic Networks, Madison, Wisconsin

*Title:* A Critical Fluid Model for a Processor Sharing Queue

1999, American Mathematical Society Sectional Meeting, Salt Lake City, Utah

*Title:* Analysis of Fluid Models for Processor Sharing Queues

1999, CSU San Marcos Department of Mathematics Colloquium

*Title:* Probabilistic Models of Queueing Systems

1996, Southern California Probability Symposium, CalTech, Los Angeles, California

*Title:* A Reversible Interacting Particle System on the Binary Tree

1998, Southern California Probability Symposium, UCLA

*Title:* Critical Exponents for a Reversible Interacting Particle System on the Binary Tree

1997, UCLA Department of Mathematics Probability Seminar

1997, American Mathematical Society National Meeting, San Diego, California

*Title:* A Reversible Interacting Particle System on the Binary Tree

**Teaching Awards**

2001, National Project NExT (New Experiences in Teaching) Fellow

1997, UCLA Robert Sorgenfrey Distinguished Teaching Assistant Award

**Teaching Experience**

1999-present, Instructor, CSUSM Department of Mathematics

*Graduate Courses:* Probability Theory; Stochastic Processes.

*Upper Division Courses:* An Introduction to Probability and Mathematical Statistics; Abstract Algebra; Mathematical Finance; Discrete Mathematics.

*Lower Division Courses:* Calculus with Applications III; Calculus with Applications II; Mathematical Ideas; Mathematics for Elementary School Teachers I.

*Developmental Courses:* Intermediate Algebra.

Winter 2006, Teaching Visitor, UCSD Department of Mathematics

*Upper Division Courses:* An Introduction to Probability and Mathematical Statistics; Mathematical Finance.

**Teaching Experience (continued)**

1999-2000 Peer Coaching Program Participant

*Partner:* Prof. Tejinder Neelon.

1993-1997, Teaching Assistant, UCLA Department of Mathematics

*Graduate Courses:* Probability Theory.

*Upper Division Course:* Linear Programming; Probability Theory.

*Lower Division Courses:* Differential Calculus, Integral Calculus, Finite Math, .

*Responsibilities:* classroom instruction, office hours, grading.

1996 Teaching Assistant, IAS/PCMI Summer Lecture Series

*Lecturer:* Dr. Jennifer T. Chayes

*Course:* Independent and Dependent Percolation

*Responsibilities:* preparation of formal lecture notes, office hours

1994 Graduate Discussion Leader, UCLA Academic Advancement Program

*Courses:* upper division Complex Analysis and Statistics

*Responsibilities:* lead group study sessions

1993, Undergraduate Teaching Assistant, UCSD Department of Mathematics

*Courses:* Calculus and Differential Equations

*Responsibilities:* office hours, writing exams, and grading

1992–1993, Undergraduate Workshop Leader, UCSD Minority Engineering Program

*Courses:* Multi-variable Calculus

*Responsibilities:* lead group discussions

**Student Projects Supervised**

SERENA MERCADO. Pricing Derivatives in an Incomplete Finite Market Model. *Master of Science Thesis*, CSUSM Department of Mathematics, in progress.

CARL BOBKOSKI. Applications of Hidden Markov Models in Molecular Biology. *Master of Science Thesis*, CSUSM Department of Mathematics, in progress.

TINA SHINSATO. Does the Golf Handicap Convert an Unfair Game into a Fair Game? *Master of Science Thesis*, CSUSM Department of Mathematics, 2005.

ERIN BOSSEMEYER. Risk Analysis for Raising the Maximum Bet at the Black Jack Table. Prepared for Pala Casino, 2004.

CRAIG TIMMONS. Study Aid for Single-Subject Mathematics CSET Exam: Test II Algebra/Number Theory. 2004.

**Professional Memberships**

American Mathematical Society (AMS) Member, 1993–2003

Association for Women in Mathematics (AWM) Member, 1993–2003

Bernoulli Society for Mathematical Statistics and Probability (BS), 2001–2005

Institute of Mathematical Statistics (IMS) Member, 1997–2005

Mathematical Association of America (MAA) Member, 1996–2003

UCLA Department of Mathematics Graduate Student Outreach (GSO), 1994–1998

**Professional Service**

2006, Performance Evaluation

2006, Journal Referee, Stochastic Processes and their Applications

2005, Journal Referee, Mathematics of Operations Research

2005, Co-Organizer, 4<sup>th</sup> CSU/ALEKS Summit

2005, Journal Referee, Mathematics of Operations Research

2005, Journal Referee, Annals of Applied Probability

2004, Local Organizer, 3<sup>rd</sup> CSU/ALEKS Summit

2004, Journal Referee, SIAM Review

**Professional Service (Continued)**

2003, Journal Referee, Probability Theory and Related Fields  
 2003, Journal Referee, Electronic Journal of Probability Theory  
 2002, Co-organized Special Session for the 2002 Project NExT Workshop  
 2001, Journal Referee, MAA College Mathematics Journal  
 2001, Co-organized Special Session for 11<sup>th</sup> INFORMS Applied Probability Society Conference  
 2000, Co-organized Annual Southern California Probability Symposium  
 2000, Journal Referee, Mathematical Biosciences  
 2000, Journal Referee, Annals of Applied Probability  
 1999, Journal Referee, Stochastic Processes and their Applications  
 1997-1998, Co-vice President, UCLA Department of Mathematics GSO

**CSUSM Service**

Fall 2006, Instructor-In-Charge: Math 051C  
 Spring 2005, Curriculum Development: Math 441 & Math 442  
 Spring 2005, Co-Instructor-In-Charge for Math 51  
 2004-2005, Minority Access to Research Careers (MARC) Steering Grant Application Committee Member  
 2004-2005, Department of Mathematics Science Client Discipline Discussion Leader  
 2004-2005, Department of Mathematics Early Assessment Program (EAP) Contact Person  
 Fall 2004, Instructor-In-Charge for Math 210, 212, & 311  
 2002-2004, Instructor-In-Charge for Math 51  
 2002-2005, Department of Mathematics Entry-Level Mathematics (ELM) Requirement Contact Person  
 2002-2005, Department of Mathematics Multiple Subject Preparation Program Advisor  
 2002-2004, Elementary Subject Matter (ESM) Council Member  
 2001-2005, Academic Senator  
 2001-2005, Nominations, Elections, Appointments, & Constitution (NEAC) Committee Member  
 2001-2003, Athletic Steering Committee Member  
 Fall 2001, Instructor-In-Charge for Math 210, 212, & 311  
 2001-2005, Department of Mathematics Entry-Level Math (ELM) Contact Person  
 2001-2005, ASI Surf Team Faculty Advisor  
 2000-2001, Curriculum Development: Math 051S & Math 390  
 Spring 2000, Instructor-In-Charge for GEM 100  
 1999-2003, Department of Mathematics Advisory Search Committee Member  
 1999-2001, Department of Mathematics Articulation Officer  
 Fall 2000, Instructor-In-Charge for Math 370  
 1999-2000, Department of Mathematics Computer Science Client Discipline Discussion Leader  
 1999-2000, Instructor-In-Charge for Math 370  
 1999-2000, Surf/Snowboard Club Faculty Adviser

**Community Service**

2000, Guest Speaker, North Broadway Elementary School, Escondido, CA