

Department of Mathematics
California State University San Marcos
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Appointments

2010–present, Professor, Department of Mathematics, CSU San Marcos
2021-2024, Department Chair
2020-2021, Sabbatical Leave of Absence, Research Associate and Teaching Visitor
Department of Mathematics, UCSD
2013-2014, Sabbatical Leave of Absence, Research Associate and Teaching Visitor
Department of Mathematics, UCSD
2010-2011, Professional Leave of Absence
2009–2011, Associate Director, Institute for Pure and Applied Mathematics (IPAM), UCLA
2004-2010, Associate Professor, Department of Mathematics, CSU San Marcos
2009-2010, Professional Leave of Absence
2005-2006, Sabbatical Leave of Absence, Research Associate and Teaching Visitor,
Department of Mathematics, UCSD
1999-2004, Assistant Professor, Department of Mathematics, CSU San Marcos
2000-2001 & Spring 2002, Professional Leave of Absence, National Science Foundation
Mathematical Sciences Postdoctoral Fellow

Research Interests

Probability Theory and Stochastic Processes, with emphasis on Stochastic Networks

Professional Awards

2022-2024, Co-PI, California Learning Lab Grant, Effective and Equitable Mathematics Pathways in
STEM Education, \$100,000
Co-investigator: Mike Piccollelli (CSUSM)
2021-2024, PI, National Science Foundation Single-Investigator Award, DMS-2054505, \$232,433
2020-2023, Co-PI, CSU Chancellors Office, Mathematics and Science Teacher Initiative, \$100,000/yr
Co-investigator: Anthony Matranga (CSUSM)
2020–2021, CSUSM Research, Scholarship and Creative Activity (RSCA) Grant, \$7,200
2019–2020, CSUSM Research, Scholarship and Creative Activity (RSCA) Grant, \$2,000
2019, National Scholastic Surfing Association, Faculty Advisor of the Year
2019, Co-PI, National Science Foundation Conference Grant, DMS-1850957, \$30,000
Co-investigators: Marek Biskup (UCLA), Paul Jung (KAIST), and Georg Menz (UCLA)
Conference: Interacting Particle Systems, Statistical Mechanics, and Related Topics
2018, Northrop Grumman Outstanding Faculty-Student Collaboration in Mathematics Award
Co-recipient: Undergraduate Marvin Pena
2016, Associated Students Incorporated Tukwut Leadership Award, Club Advisor of the Year
2016, CSUSM Campus Recreation Outstanding Advisor Award
2015-2019, PI, National Science Foundation Single-Investigator Award, DMS-1501198, \$180,000
2015-2016, President's Outstanding Faculty Award for Scholarship & Creative Activity

Professional Awards (continued)

- 2011, Inaugural CSUSM Campus Recreation Outstanding Advisor Award
- 2009, Greater San Diego Area Mathematics Council Outstanding Post Secondary Mathematics Teacher
- 2007, Best Publication in Applied Probability Award
Presented by: The Applied Probability Society of INFORMS (once every 2 years)
Co-recipients: H. Christian Gromoll and Ruth J. Williams
- 2005–2007, National Security Agency Young Investigator Award, \$30,000

Consulting Positions

- Summers 2009 & 2003, Institute for Defense Analysis Center for Communications Research
Project: SCAMP Participant
- 2004-2005, Special Consultant to the CSU Office of the Chancellor (Math 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 Domain

Postdoctoral Research Fellowships

- 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

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; 1994–1997 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 Caledonian Honor Society Inductee.

Grants

- 2022-2024, Co-PI, California Learning Lab Grant, Effective and Equitable Mathematics Pathways in STEM Education, \$100,000
Co-investigator: Mike Piccollelli (CSUSM)
- 2021-2024, PI, National Science Foundation Single-Investigator Award, DMS-2054505, \$232,433
- 2020-2023, Co-PI, CSU Chancellors Office, Mathematics and Science Teacher Initiative, \$100,000/yr
Co-investigator: Anthony Matranga (CSUSM)
- 2020-2021, National Science Foundation RUI Research Opportunity Award, Supplement to Ruth Williams' (PI) Grant DMS-1712974S, \$50,000
- 2020–2021, CSUSM Research, Scholarship and Creative Activity (RSCA) Grant, \$7,200
- 2019–2020, CSUSM Research, Scholarship and Creative Activity (RSCA) Grant, \$2,000
- Summer 2019, ViaSat CSM Summer Scholar Award with Undergraduates Michelle Guevarra and Min-jung Kang
- 2019, Co-PI, National Science Foundation Conference Grant, DMS-1850957, \$30,000
Co-investigators: Marek Biskup (UCLA), Paul Jung (KAIST), and Georg Menz (UCLA)
Conference: Interacting Particle Systems, Statistical Mechanics, and Related Topics: A Conference to Honor the Contributions of Thomas Liggett
- 2015–2019, PI, National Science Foundation Single-Investigator Award, DMS-1501198, \$180,000
- Summer 2015, ViaSat CSM Summer Scholar Award with Undergraduate Justin Mulvany
- 2014–2015, CSUSM University Professional Development Grant
- 2014–2015, CSUSM Faculty Center Professional Development Grant
- 2013–14, National Science Foundation RUI Research Opportunity Award, Supplement to Ruth Williams' (PI) Grant DMS-1206772
- Summer 2013, ViaSat CSM Summer Scholar Award with Undergraduate Sean Malter
- Summer 2012, ViaSat CSM Summer Scholar Award with Undergraduate Ricky Hunsperger
- 2005–2007, National Security Agency Young Investigator Award, \$30,000
- 2005–06, National Science Foundation RUI Research Opportunity Award, Supplement to Ruth Williams' (PI) Grant DMS-0305272
- 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

Publications

- CHUNXU JI* AND AMBER L. PUHA. Heavy Traffic Scaling Limits for Shortest Remaining Processing Time Queues with Light Tailed Processing Time Distributions. *Queueing Systems: Theory and Applications*, submitted.
- ANGELOS AVEKLOURIS**, AMBER L. PUHA AND AMY R. WARD. A Fluid Approximation for a Matching Model with General Reneging Distributions. *Queueing Systems: Theory and Applications*, to appear.
- SAYAN BANNERJEE, AMARJIT BUDHIRAJA AND AMBER L. PUHA. Heavy Traffic Scaling Limits for Shortest Remaining Processing Time Queues with Heavy Tailed Processing Time Distributions. *Annals of Applied Probability*, 32:4, 2587–2651, 2022.
<https://doi.org/10.1214/21-AAP1741>
- YUEYANG ZHONG**, AMY R. WARD, AND AMBER L. PUHA. Asymptotically Optimal Idling in the GI/GI/N+GI Queue. *Operations Research Letters*, 34:3, 362–369, 2022.
<https://doi.org/10.1016/j.orl.2022.04.005>
- AMBER L. PUHA AND AMY R. WARD. Fluid Limits for Multiclass Many Server Queues with General Reneging Distributions and Head-of-the-Line Scheduling. *Mathematics of Operations Research*, Published online in Articles in Advance: 21 Dec 2021, pp. 1–37.
<https://doi.org/10.1287/moor.2021.1166>
- DAVID ALDOUS, PIETRO CAPUTO, RICK DURRETT, PAUL JUNG, ALEXANDER E. HOLROYD AND AMBER L. PUHA. The Life and Mathematical Legacy of Thomas M. Liggett. *Notices of the American Mathematical Society*, January 2021.
- AMBER L. PUHA AND AMY R. WARD. Scheduling an Overloaded Multiclass Many-Server Queue with Impatient Customers. In *INFORMS TutORials in Operations Research*, 189–217, 2019.
<https://doi.org/10.1287/educ.2019.0196>
- JUSTIN MULVANY*, AMBER L. PUHA AND RUTH J. WILLIAMS. Asymptotic Behavior of a Critical Fluid Model for a Multiclass Processor Sharing Queue via Relative Entropy. *Queueing Systems: Theory and Applications*, 93: 351–397, 2019.
- AMBER L. PUHA AND RUTH J. WILLIAMS. Asymptotic Behavior of a Critical Fluid Model for a Processor Sharing Queue via Relative Entropy. *Stochastic Systems*, 6: 251–300, 2016.
- AMBER L. PUHA. Diffusion limits for shortest remaining processing time queues under nonstandard spatial scaling. *Annals of Applied Probability*, 25: 3381–3404, 2015.
- OTIS JENNINGS AND AMBER L. PUHA. The fluid limit of an overloaded FIFO queue with general abandonment. *Stochastic Systems*, 3: 262–321, 2013.
- H. CHRISTIAN GROMOLL, LUKASZ KRUK, AND AMBER L. PUHA. The diffusion limit of an SRPT queue. *Stochastic Systems*, 1: 1–16, 2011.
- DOUGLAS DOWN, H. CHRISTIAN GROMOLL, AND AMBER L. PUHA. Fluid limits for shortest remaining processing time queues. *Mathematics of Operations Research*, 34: 880 - 911, November 2009.
- DOUGLAS DOWN, H. CHRISTIAN GROMOLL, AND AMBER L. PUHA. State-dependent response times via fluid limits for shortest remaining processing time queues. *San Diego ACM-Sigmetrics Performance Evaluation and Review*, June 2009.
- 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.

** PhD Student Co-Author

* MS Student Co-Author

Publications (continued)

- STAN BARRICK, AMBER PUHA, AND CSU INFORMATION TECHNOLOGY SERVICES ACADEMIC TECHNOLOGY DIVISION. CSU Math Success Website, <http://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.
- STAN BARRICK AND AMBER PUHA. Teaching Developmental Mathematics with ALEKS: An Implementation Guide. McGraw-Hill, 2003.
- 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, 2002.
- AMBER L. PUHA. Critical exponents for a reversible nearest particle system on the binary tree. *Annals of Probability*, 28(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.

Invited Presentations/Workshop Participation

- 2023, Reflected Brownian Motion and Related Topics, Station Biologique Roscoff, France
Title: Scaling Limits for Shortest Remaining Processing Time Queues
- 2022, Institute of Mathematical Statistics Annual Meeting, London
Invited Session: Reflecting Diffusions, Stochastic Networks and Applications
Chair: Cristina Constantini
Title: Diffusion Limits for Multiclass Processor Sharing Queues
- 2022, Joint Mathematics Meetings, Virtual
AMS Special Session: Transient Probabilities of Random Processes, Duality Theory and Gambler's Ruin Probabilities
Chair: Alan Krinik, San Fransisco State University
Title: Diffusion Limits for Multiclass Processor Sharing Queues
- 2022, University of Denver, Department of Mathematics
Invited Session: Analysis and Dynamics Colloquium
Organizer: Mei Yin
Title: Scaling Limits for Shortest Remaining Processing Time Queues
- 2020, UC San Diego Department of Mathematics Probability Colloquium, La Jolla, CA
Title: Heavy Traffic Scaling Limits for Shortest Remaining Processing Time Queues with Heavy Tailed Processing Time Distributions
- 2020, INFORMS Annual Meeting, Baltimore
Invited Special Session: Asymptotic Analysis of Stochastic Processing Networks
Chair: Siva Theja Maguluri, Georgia Tech
Title: Heavy Traffic Scaling Limits for Shortest Remaining Processing Time Queues with Heavy Tailed Processing Time Distributions

Invited Presentations/Workshop Participation (Continued)

- 2019, AMS Fall Western Sectional Meeting, Riverside
Special Session on: Celebrating MM Rao's Many Mathematical Contributions as he Turns 90 Years Old
Chair: Alan Krinik, Department of Mathematics, Cal Poly Pomona
Title: Scaling Limits for Shortest Remaining Processing Time Queues.
- 2019, INFORMS Annual Meeting, Seattle
Invited Special Session: Control and Analysis of Queueing Systems
Chair: Johan van Leeuwen
Title: Fluid Limits for an Overloaded Multiclass Many Server Queue with General Reneging Distributions
- 2019, INFORMS Applied Probability Society Conference, Brisbane, AUS
Invited Special Session: Stochastic Networks and Scaling Limits
Chair: Amarjit Budhiraja, Department of Statistics and Operations, UNC Chapel Hill
Title: Analysis of Multiclass Processor Sharing Queues via Relative Entropy
- 2019, Queues, Modelling, and Markov Chains: A Workshop Honouring Prof. Peter Taylor, Queensland, AUS, *Invited Participant*
- 2019, UC San Diego Department of Mathematics Probability Colloquium, La Jolla, CA
Title: Analysis of Multiclass Processor Sharing Queues via Relative Entropy
- 2019, Stanford University Department of Mathematics Probability Colloquium, Palo Alto, CA
Title: Analysis of Multiclass Processor Sharing Queues via Relative Entropy
- 2019, University of Arizona Department of Mathematics Probability Colloquium, Tucson, CA
Title: Analysis of Multiclass Processor Sharing Queues via Relative Entropy
- 2018, INFORMS Annual Meeting, Phoenix
Invited Special Session: Control and Analysis of Queueing Systems
Chair: Guodong (Gordon) Pang, Department of IME, Penn. State
Title: Analysis of Processor Sharing Queues via Relative Entropy
- 2018, AMS Fall Western Sectional Meeting, San Francisco
Special Session on: Markov Processes, Gaussian Processes and Applications, II
Chair: Alan Krinik, Department of Mathematics, Cal Poly Pomona
Title: Diffusion Limits for Shortest Remaining Processing Time Queues Under Nonstandard Spatial Scaling
- 2018, Stochastic Networks Conference, Edinburgh, UK
Title: Asymptotic Behavior of a Critical Fluid Model for a Processor Sharing Queue via Relative Entropy
- 2017, INFORMS Applied Probability Society Conference, Northwestern University
Invited Special Session: Control of Queueing Systems
Chair: Amy Ward, Marshall School of Business, University of Southern California
Title: Asymptotic Optimality of Many Server Queues with Reneging
- 2017, INFORMS Applied Probability Society Conference, Northwestern University
Invited Special Session: Scaling Limits of Stochastic Networks
Chair: Kavita Ramanan, Department of Applied Mathematics, Brown University
Title: Analysis of Processor Sharing Queues via Relative Entropy
- 2017, UC San Diego Department of Mathematics Probability Seminar
Title: Asymptotic Optimality of Many Server Queues with Reneging

Invited Presentations/Workshop Participation (Continued)

- 2016, World Congress of Probability and Statistics, Fields Institute, Toronto, CN
Invited Special Session: Scaling Limits of Stochastic Networks
Chair: Kavita Ramanan, Department of Applied Mathematics, Brown University
Title: Analysis of Processor Sharing Queues via Relative Entropy
- 2016, UC San Diego Department of Mathematics Probability Seminar
Title: Analysis of Processor Sharing Queues via Relative Entropy
- 2016, Oregon State University, Department of Mathematics Probability Seminar
Title: Diffusion Limits for Shortest Remaining Processing Time Queues under Nonstandard Spatial Scaling
- 2016, Oregon State University, Department of Mathematics Pi Mu Epsilon Induction Ceremony
Title: From Queueing Theory to Modern Stochastic Network Models: A Mathematician's Perspective
- 2016, Oregon State University, Department of Mathematics Colloquium
Title: Analysis of Processor Sharing Queues via Relative Entropy
- 2016, University of Virginia, Department of Mathematics Probability Seminar
Title: Analysis of Processor Sharing Queues via Relative Entropy
- 2016, Wavelength Brewing Co., Vista, CA
Event: 21+ Science Series – A Scientist and a Mathematician Walk into a Bar
Host: The San Diego Festival of Science and Engineering
Title: From Queueing Theory to Modern Stochastic Network Models: A Mathematician's Perspective
- 2015, Institute for Mathematics and its Applications, University of Minnesota
Conference: Reflected Brownian Motions, Stochastic Networks and their Applications
Title: Diffusion Limits for Shortest Remaining Processing Time Queues under Nonstandard Spatial Scaling
- 2014, INFORMS Annual Meeting, San Francisco
Invited Special Session: Scaling Limits of Stochastic Networks
Chair: Kavita Ramanan, Department of Applied Mathematics, Brown University
Title: Diffusion Limits for Shortest Remaining Processing Time Queues under Nonstandard Spatial Scaling
- 2014, University of Virginia, Department of Mathematics Probability Seminar
Title: An Unconventional Functional Central Limit Theorem for the Queue Length Process in a Shortest Remaining Processing Time Queue
- 2013, UC San Diego Department of Mathematics Probability Seminar
Title: Performance Analysis of Shortest Remaining Processing Time Queues
- 2013, Issac Newton Institute, Cambridge University, *Invited Participant*
Workshop: Modern Probabilistic Techniques for Design, Stability, Large Deviations, and Performance Analysis of Communication, Social, Energy, and Other Stochastic Systems and Networks
- 2011, INFORMS Applied Probability Society Meeting, Stockholm
Invited Special Session: Stochastic Models in Computer and Communication Networks
Chair: Amber L. Puha, Department of Mathematics, CSUSM
Title: Fluid Limits for Overloaded FIFO queues with General Abandonments
- 2011, Mathematical Biology Institute, Ohio State University
Program: Stochastics in Biological Systems
Workshop: New Questions in Probability Theory Arising in Biology

Invited Presentations/Workshop Participation (Continued)

- 2010, AMS Sectional Meeting, UCLA
Session: Recent Trends in Probability and Related Fields
Organizers: Marek Biskup, Yuval Peres, & Sebastien Roch
Title: A Fluid Limit Theorem for a Shortest Remaining Processing Time Queue
- 2010, Issac Newton Institute, Cambridge University
Program: Stochastic Processes in the Communication Sciences
Dates of Visit: March 21, 2010 through April 10, 2010
- 2009, INFORMS Annual Meeting, San Diego
Cluster: Applied Probability Society
Session: Stochastic Networks and Related Processes
Chair: John Hassenbein, Department of Mechanical Engineering, UT Austin
Title: Heavy Traffic Limits for G/G/1 SRPT Queues
- 2009, Workshop in Honor of Thomas M. Liggett's 65th Birthday, Peking University, Beijing
Organizer: Dayue Chen, Department of Mathematics, Peking University
Title: Limit Theorems for a Shortest Remaining Processing Time Queue
- 2008, INFORMS Annual Meeting, Washington DC
Cluster: Applied Probability Society
Session: Asymptotic Limit Theorems for Stochastic Networks
Chair: Kavita Ramanan, Department of Mathematical Sciences, Carnegie Mellon Univ.
Title: Limit Theorems for a Shortest Remaining Processing Time Queue
- 2007, Southern California Probability Symposium, UCI
Title: The Fluid Limit of a Shortest Remaining Processing Time Queue
- 2007, 14th Informs Applied Probability Society Meeting, Eindhoven, The Netherlands
Session: Limit Theorems for Queueing Systems with Measure-valued State Descriptors
Chair: Doug Down, Department of Computing and Software, McMaster University
Title: The Fluid Limit of a Shortest Remaining Processing Time Queue
- 2005, Stanford University Department of Mathematics Probability Colloquium, Palo Alto, CA
Title: A Reversible Interacting Particle System on the Binary Tree
- 2005, 13th Informs Applied Probability Society Meeting, Ottawa, CN
Session: Queues with Time-Varying Inputs
Co-Chairs: Alan Scheller-Wolf, Tepper School, Carnegie Mellon University and Mor Harchol-Balter, Department of Computer Science, Carnegie Mellon
Title: The Fluid Limit of an Overloaded Processor Sharing Queue
- 2005, 8th Annual Legacy of R.L. Moore Conference, Austin, TX
- 2004, American Institute of Mathematics, Palo Alto, CA
Workshop: Sharp Thresholds for Mixing Times
- 2004, 8th Annual California Mathematics Counsel, Community Colleges Recreational Mathematics Conference, Reno, NV
Title: An Introduction to the Mathematics of Pricing Stock Options
- 2004, 3rd CSU/ALEKS Summit, CSUSM
Title: Using Content Driven Objectives to Pace Student Learning
- 2003, Institute for Advanced Study, Princeton, New Jersey
Program: 10th Anniversary Program for Women in Mathematics Reunion Celebration
Title: A Heavy Traffic Analysis of a Processor Sharing Queue

Invited Presentations/Workshop Participation (Continued)

- 2003, 2nd 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, UC San Diego 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
Cluster: Applied Probability Society
Session Title: Queueing Systems in Heavy Traffic
Chair: John Hasenbein, Department of Mechanical Engineering, University of Texas at Austin
Title: Asymptotic Behavior of the Fluid Limit for Heavily Loaded Processor Sharing Queues
- 2001, 11th INFORMS Applied Probability Society Conference, New York
Session Title: Fluid and Diffusion Approximations of Queues
Chair: Amber Puha, CSUSM, Department of Mathematics
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
- 2001, UC San Diego Department of Mathematics Probability Seminar
Title: Rates of convergence in the Key Renewal Theorem
- 2001, Project NExT Colloquium, MathFest, Madison, Wisconsin
- 2000, UC San Diego 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
- 1998, UC San Diego Department of Mathematics Probability Seminar
Title: Critical Exponents for a Reversible Interacting Particle System
- 1998, UCLA Department of Mathematics Probability Seminar
Title: A Reversible Interacting Particle System on the Binary Tree
- 1998, Pepperdine 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

2020, Bernoulli-IMS One World Symposium, Virtual

Title: Scaling Limits for Shortest Remaining Processing Time Queues

2020, Seminar on Stochastic Processes, Michigan State University

Title: Shortest Remaining Processing Time Queues

2018, Stochastic Processes and their Applications, Gothenberg

Title: Fluid Limits of Many Server Queues with Reneging

2017, Seminar on Stochastic Processes, University of Virginia

Title: Asymptotic Optimality of Many Server Queues with Reneging

2007, 3rd Cornell Probability Summer School, NY

Title: A Fluid Limit for a Shortest Remaining Processing Time Queue

2006, 2nd Cornell Probability Summer School, NY

2005, 1st Cornell Probability Summer School, NY

2005, 30th 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(lessness) 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 Janeiro, Brasil

Title: A Strictly 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

1998, Southern California Probability Symposium, UCLA

Title: Critical Exponents for a Reversible Interacting Particle System

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

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

Title: A Reversible Interacting Particle System on the Binary Tree

Teaching Awards

- 2009, Greater San Diego Area Mathematics Council Outstanding Post Secondary Mathematics Teacher
- 2008, Nominated by Calculus with Applications II students for President's Award for Innovation in Teaching
- 2007, Nominated by General Education Mathematics 100 students for President's Award for Innovation in Teaching
- 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; Queueing Theory.
 - Upper Division Courses:* Foundations of Analysis; Modern Geometry; An Introduction to Probability and Mathematical Statistics; Abstract Algebra; The Mathematics of Finance; Discrete Mathematics.
 - Lower Division Courses:* Calculus with Applications I, II, & III; Mathematical Ideas; Mathematics for Elementary School Teachers I.
 - Developmental Courses:* Intermediate Algebra.
- Winter 2006 & 2014, Teaching Visitor, UCSD Department of Mathematics
 - Upper Division Courses:* An Introduction to Probability and Mathematical Statistics; Mathematics of Finance.
- 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
 - Responsibilities:* lead group discussions pertaining to Multi-variable Calculus

Graduate Student Thesis Projects Supervised

- CHRIS LU. TBD. *Master of Science Thesis*, CSUSM Department of Mathematics, TBD.
- MARVIN PENA. Stationary Behavior of Shortest Remaining Processing Time Queue with Heavy Tails. *Master of Science Thesis*, CSUSM Department of Mathematics, Expected Spring 2024.
- CHUNXU JI. Diffusion Limits for Shortest Remaining Processing Time Queue with Light Tails. *Master of Science Thesis*, CSUSM Department of Mathematics, Summer 2022.
- JUSTIN MULVANY. A Relative Entropy Approach to Study Critical Fluid Model Solutions for Multiclass Processor Sharing Queues. *Master of Science Thesis*, CSUSM Department of Mathematics, Spring 2018.
2018 President's Outstanding Graduate Student Award
- JASON HULTMAN. Fast-Track Queuing Models for Emergency Rooms. *Master of Science Thesis*, CSUSM Department of Mathematics, Summer 2015.
- JOSHUA BOTICA. An Exposition of Little's Law. *Master of Science Thesis*, CSUSM Department of Mathematics, Spring 2014.
- CARL BOBKOSKI. Applications of Hidden Markov Models in Molecular Biology. *Master of Science Thesis*, CSUSM Department of Mathematics, Spring 2010.
- JOSH LOVELACE. Reversible Markov Chains. *Master of Science Thesis*, CSUSM Department of Mathematics, Summer 2009.
- SERENA MERCADO. Pricing Derivatives in an Incomplete Finite Market Model. *Master of Science Thesis*, CSUSM Department of Mathematics, Summer 2008.
- TINA SHINSATO. Does the Golf Handicap Convert an Unfair Game into a Fair Game? *Master of Science Thesis*, CSUSM Department of Mathematics, 2005.

Graduate Student Comprehensive Exam Committees Chaired

- KELLY BROWER, Spring 2020.
- TRANG TANG, Spring 2019.
- XIAODAN (FRANKIE) XU, Fall 2018.
- NICHOLAS SHUMAKER, Spring 2013.
- STEVEN MAXEY, Fall 2012.
- APOLINAR MARISCAL, Spring 2012.

Undergraduate Student Projects Supervised

- MINJUNG KANG. Analysis of the Truncated Workload Processes in a Shortest Remaining Processing Time Queue. Research Supported by ViaSat, Summer 2019.
- MICHELLE GUEVARRA. Shortest Remaining Processing Time Queues and the Fréchet Distribution. Research Supported by ViaSat, Summer 2019.
- MARVIN PENA. Analysis of an Optimization Problem Arising in Optimal Scheduling for Multiclass Many Server Queues with Reneging.
2017–19 RISE Scholar
2018 CSUSM Student Research Competition Finalist
2018 Northrop Grumman Outstanding Faculty-Student Collaboration in Mathematics Award
- JUSTIN MULVANY. Investigating Empirical CDFs Generated by Shortest Remaining Processing Time Queues. Research Supported by ViaSat, Summer 2015.
- SEAN MALTER. Uncovering the Effect of Variance in a Shortest Remaining Processing Time Queue. Research Supported by ViaSat, Summer 2013.

Undergraduate Student Projects Supervised (continued)

RICHARD HUNSPERGER. Simulating the Performance of a Shortest Remaining Processing Time Queue. Research Supported by ViaSat, Summer 2012.

JUAN NOGUEZ. Elementary Queueing Models. Research Supported by RISE, Spring 2009.

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.

Undergraduate Student Learning Assistants Supervised

FALL 2018, Calculus with Applications II,
Chieh-Mi Lu (Fiona)

FALL 2015, Calculus with Applications II,
Donald Baltazar, Jose Sam Felipe, Trevor Ryback

SPRING 2015, Calculus with Applications I,
Elisandra Amparano, Raul Diaz, Addilene Gonzalez, JP Morgan, Trevor Ryback

FALL 2014, Calculus with Applications I,
JP Morgan, Jon Pont, Michelle Salem, Anahi Soriano

SPRING 2009, Calculus with Applications I,
Yang Hu, Bethany Levering, Amber Wright

FALL 2008, Calculus with Applications II,
Nora Lazcano, Juan Andrés Noguez de la Cerda

SPRING 2009, Calculus with Applications I,
Megan Dudley, Juan Andrés Noguez de la Cerda, George Rizk

Service Awards

2019, National Scholastic Surfing Association, Faculty Advisor of the Year

2016, Associate Students Incorporated Tukwut Leadership Award, Club Advisor of the Year

2016, CSUSM Campus Recreation Outstanding Advisor Award

2011, Inaugural CSUSM Campus Recreation Outstanding Advisor Award

Professional Service

2013–present, Coordinator, Southern California Probability Symposium

2019–present, Associate Editor, Mathematics of Operations Research

2021–present, Seminar on Stochastic Processes Long-Term Scientific Committee Member

2022–present, Associate Editor, Stochastic Systems

2023–2026, AMS Simons Research Enhancement Grants for Primarily Undergraduate Institution (PUI) Faculty Committee Member

2023, IMS Nominations Committee Member

2023, Co-Organizer, Southern California Probability Symposium: Looking Forward, UCSD, March 20-21, 2023

2022, Journal Referee, Queueing Systems: Theory and Applications

2021-2023, Stochastic Networks, Applied Probability, and Performance (SNAPP) Seminar Advisory Board

2021-2022, AMS International Congress of Mathematics 2022 Travel Grants Selection Committee

Professional Service (continued)

- 2020–2021, Co-Guest Editor with Paul Jung (KAIST), *Celebratio Mathematica* Compendium of Thomas M. Liggett’s Research
- 2021, Grant Review Panelist, National Science Foundation
- 2021, Journal Referee, *SIAM Journal on Mathematical Analysis*
- 2017–2020, IMS Travel Awards Committee Member
- 2016–2019, INFORMS Applied Probability Society Prize Committee Member
- 2019, Co-Organizer, Interacting Particle Systems, Statistical Mechanics, and Related Topics: A Conference to Honor the Contributions of Thomas Liggett, UCLA-IPAM, March 7-9, 2019
- 2019, Invited Special Session Organizer, INFORMS Annual Meeting, Seattle
Title: Machine Learning and Related Topics
Speakers: Carolyn Beck (UI-UC), Daniel Cullina (Princeton U), Hongseok Namkoong (Stanford U) & R. Srikant (UI-UC)
- 2019, Journal Referee, *Mathematics of Operations Research*
- 2018, Invited Session Organizer, 40th Conference on Stochastic Processes and their Applications, Gothenburg, Sweden
Title: Scaling Limits for Stochastic Networks
Speakers: Anton Braverman (Northwestern), Lea Popovik (Concordia), & Anup Biswas (IISER Prune)
- 2018, Grant Review Panelist, National Science Foundation
- 2017, Grant Review Panelist, National Science Foundation
- 2017, Journal Referee, *Mathematics of Operations Research*
- 2011-2016, IMS Representative, Joint Committee for Women in the Mathematical Sciences
- 2013-2016, Member at Large, American Mathematical Society Council
- 2013-2016, Member, American Mathematical Society Committee on Publications
- 2016, Promotion Referee, UCSD Department of Mathematics
- 2016, Journal Referee, *Annals of Applied Probability*
- 2016, Journal Referee, *Mathematics of Operations Research*
- 2016, Contributed Session Organizer, World Congress of Probability and Statistics, Fields Institute, Toronto, CN
- 2016, Co-Organizer, Stochastic Networks Conference, University of California San Diego
- 2014–2015, World of Statistics, Bernoulli Society Representative
- 2015, Co-Organizer, Institute for Mathematics and its Applications Special Workshop: Reflected Brownian Motions, Stochastic Networks, and their Applications
- 2014, Grant Review Panelist, National Science Foundation
- 2014, Journal Referee, *Mathematics of Operations Research*
- 2014, Journal Referee, *Operations Research*
- 2014, Co-Organizer, Seminar on Stochastic Processes, University of California San Diego
- 2014, Co-Organizer, WimSoCal (Woman in Mathematics in Southern California) Symposium, University of San Diego
- 2013, Journal Referee, *Operations Research*
- 2013, Journal Referee, *Mathematics of Operations Research*
- 2013, Journal Referee, *Annals of Applied Probability*
- 2012, Co-Organizer, The 3rd Workshop for Women in Probability, Duke University

Professional Service (continued)

2009-2011, Associate Director, Institute for Pure and Applied Mathematics, UCLA
2011, Program Committee Member, 16th INFORMS Applied Probability Society Conf.
2011, Journal Referee, Operations Research
2010, Local Organizer, Southern California Probability Symposium, UCLA-IPAM
2009, Journal Referee, SIAM Journal of Control and Optimization
2009, Journal Referee, Annals of Applied Probability
2008, Co-organizer, The 2nd Workshop for Women in Probability, Cornell University
2008, Journal Referee, Electronic Journal of Probability
2007, Co-Organizer, Special Session for 14th INFORMS Applied Probability Society Conf.
2007, Journal Referee, Annals of Applied Probability
2006, Journal Referee, Performance Evaluation
2006, Journal Referee, Stochastic Processes and their Applications
2006, Journal Referee, Mathematics of Operations Research
2005, Co-Organizer, 4th CSU/ALEKS Summit
2005, Journal Referee, Mathematics of Operations Research
2005, Journal Referee, Annals of Applied Probability
2004, Local Organizer, 3rd CSU/ALEKS Summit
2004, Journal Referee, SIAM Review
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-organizer, Special Session for 11th INFORMS Applied Probability Society Conf.
2000, Co-organizer, 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

Professional Memberships

1993-2003, 2012-2016, & Life Member since 2016 AMS, American Mathematical Society
2005-2023, APS, Applied Probability Society (INFORMS)
2001-2021, BS, Bernoulli Society for Mathematical Statistics and Probability
1997-2021, IMS, Institute of Mathematical Statistics
2008-2021, INFORMS, Institute for Operations Research and the Management Science
1993-2003, 2016-21 AWM, Association for Women in Mathematics
1996-2003, MAA, Mathematical Association of America
1994-1998, GSO, UCLA Department of Mathematics Graduate Student Outreach

Community Service

- 2016, Guest Presenter, A Mathematician and a Scientist Walk Into a Bar, SuperSTEM Week, Wavelength Brewery
- 2015, Guest Presenter, Fireside Chat with a Scientist, SuperSTEM Saturday, CSUSM
- 2012, Guest Speaker, CSM Advisory Council Meeting
- 2010, Guest Speaker, Curtis Center, UCLA
- 2000, Guest Speaker, North Broadway Elementary School, Escondido, CA

CSUSM Service

- 2001–present, ASI/Campus Recreation Surf Team Faculty Advisor
- 2021–present, Chair, Department of Mathematics
- 2023–present, Co-Director, Faculty Champions for Teacher Recruitment (FaCTR) Program)
- 2023–2024, Chair, Dr. Picollelli Promotion to Full Professor Peer Review Committee's
- 2023–2024, Common Member, 5 Lecturer Peer Review Committee's
- 2020–2023, CSTEM Co-Director, Math and Science Teacher Initiative Grant
- 2022–2023, Common Member, Dr. Ayers, Dr. Hanson, and Dr. Joshi, Peer Review Committees
- 2022–2023, Instructor-in-Charge: Math 105+5
- 2014–2023, Learning Assistant Program Math Coordinator
- 2021–2022, Member, Dr. Ayer Peer Review Committee, Periodic Review
- 2019–2020, Member, President's Award for Scholarship & Creative Activity Committee
- 2019–2020, Member, Reid Lecture Series Committee, Department of Mathematics
- 2019–2020, Member, Dr. Whittlesey Peer Review Committee, Promotion to Full Professor
- 2019–2020, Member, Dr. Randy Woodward Review Committee, Lecturer Periodic Review
- 2017–2020, Faculty Advisor, AMS Math Graduate Student Chapter, Department of Mathematics
- 2015–2020, Graduate Coordinator, Department of Mathematics
- 2015–2020, Instructor-In-Charge: Math 160 & 162
- 2014–2020, Chair, Applied Mathematics Task Force, Department of Mathematics
- 2018–2019, Chair, Dr. Aitken Peer Review Committee, Difference-in-Pay-Leave
- 2016–2019, Chair, Reid Lecture Series Committee, Department of Mathematics
- 2017–2018, Coordinator, Hypatian Society, Department of Mathematics
- 2017–2018, Chair, Dr. Chien Peer Review Committee, Post Tenure Period Evaluation
- 2017–2018, Chair, Dr. Joshi Peer Review Committee, Tenure Evaluation
- 2016–2017, Chair, Dr. Joshi Peer Review Committee, 4th Year Retention Evaluation
- 2016–2017, Chair, President's Outstanding Faculty Award for Scholarship & Creative Activity Selection Committee
- 2015–2016, Member, Reid Lecture Series Committee, Department of Mathematics
- 2015–2016, Chair, Dr. Joshi Peer Review Committee, 3rd Year Periodic Review
- 2015, Panelist, Women in Academia: Teaching while Female, CSUSM Faculty Center
- 2014–2015, CSM Curriculum Review Committee Member, Fall
- 2014–2015, Coordinator, Hypatian Society, Department of Mathematics
- 2014–2015, Chair, Dr. Joshi Peer Review Committee, 2nd Year Retention Review
- 2014–2015, Instructor-In-Charge: Math 100 & 160

CSUSM Service (continued)

2012–2013, Chair, Department of Mathematics Assistant Professor Search Committee
2012–2013, Chair, Graduate Studies Council
2012–2013, Kinesiology Client Discipline Discussion Leader, Department of Mathematics
2012–2013, Co-coordinator, Hypatian Society, Department of Mathematics
2012–2013, Colloquium Coordinator, Department of Mathematics
2012–2013, Instructor-In-Charge: Math 100, 162, & 260
2012–2013, Member, Hansen Promotion and Tenure Peer Review Committee
2011–2013, Graduate Coordinator, Department of Mathematics
2011–2012, Single Subject Matter Program Coordinator, Department of Mathematics
2011–2012, Instructor-In-Charge: Math 162
2008–2009, Graduate Coordinator, Department of Mathematics
2008–2009, Biological Sciences Client Discipline Discussion Leader, Dept. of Mathematics
2008–2009, COAS Math & Science Rep., Faculty Center Advisory Council Committee
Spring 2008–2009, Instructor-In-Charge: GEM 100
2007–2008, Member, Ramamurthi Promotion and Tenure Peer Review Committee
2006–2009, Instructor-In-Charge: Math 051C
Spring 2007, Curriculum Development: Math 340
Spring 2005, Curriculum Development: Math 441 & Math 442
Spring 2005, Co-Instructor-In-Charge: Math 51
2004–2005, Member, Minority Access to Research Careers (MARC) Grant Application Steering Committee
2004–2005, Science Client Discipline Discussion Leader, Department of Mathematics
2004–2005, Contact Person, Early Assessment Program (EAP), Dep. of Mathematics
Spring 2005, Member, Ramamurthi 3rd Year Periodic Review, Peer Review Committee
Fall 2004, Instructor-In-Charge: Math 210, 212, & 311
2002–2004, Instructor-In-Charge: Math 51
2002–2005, Advisor, Multiple Subject Preparation Program, Department of Mathematics
2002–2004, Member, Elementary Subject Matter (ESM) Council
2001–2005, Academic Senator
2001–2005, Member, Nominations, Elections, Appointments, & Constitution (NEAC) Committee
2001–2005, Contact Person, Entry-Level Math (ELM), Department of Mathematics
2001–2003, Member, Athletic Steering Committee
Fall 2001, Instructor-In-Charge: Math 210, 212, & 311
2000–2001, Curriculum Development: Math 051S & Math 390
Spring 2000, Instructor-In-Charge: GEM 100
1999–2003, Member, Faculty Search Committee, Department of Mathematics
1999–2001, Articulation Officer, Department of Mathematics

CSUSM Service (continued)

Fall 2000, Instructor-In-Charge: Math 370

1999–2000, Computer Science Client Discipline Discussion Leader, Dept. of Mathematics

1999–2000, Instructor-In-Charge: Math 370

1999–2000, ASI Surf/Snowboard Club Faculty Adviser