

Department of Mathematics and Statistics
Metropolitan State University of Denver
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Teaching Interests

Calculus, mathematical modeling, partial differential equations, numerical analysis, differential equations, introduction to statistics, complex variables, and linear algebra

Research Interests

Light propagation in biological tissues, mathematical modeling, applied mathematics education, numerical analysis, differential equations, asymptotic and perturbation analysis, biomedical optics, and photonics

Employment

Associate Professor, Metropolitan State University of Denver. (August 2019 - Present).
Assistant Professor, Metropolitan State University of Denver. (August 2014 - August 2019).
Research Assistant, University of California, Merced. (December 2007 - May 2014).
Teaching Fellow, University of California, Merced. (January 2011 - December 2013).
Lead Instructor, University of California, Merced. (January 2012 - May 2012).
Teaching Assistant, University of California, Merced. (August 2007 - May 2010).
Assistant Facilitator, B A STAR Program. (June 2007 - August 2007).

Education

Ph.D. 2014 in Applied Mathematics

University of California, Merced

Thesis Title: Modeling diffuse reflectance measurements of light scattered by layered tissues

PhD Advisor: Arnold D. Kim

Awards: Dean's Distinguished Fellowship (2014), AGEP Scholar (2013), and Certificate of Achievement in Research and Teaching (2012)

B.S. 2007 in Applied Mathematics

California State University, Chico

Minors in Physics, Theatre, and Ethics.

Awards: Dean's List, Graduated with Honors in General Education

Teaching Experience

Mathematical Modeling

Numerical Analysis I

Numerical Analysis II

Differential Equations

Partial Differential Equations

Calculus I

Calculus II

Calculus III

College Trigonometry

College Algebra

College Algebra through Modeling

Introduction to Statistics

Independent Study (UG research projects):

Mathematical Applications of Optics

Mathematics of Light Propagation

Mathematics of Protein Folding

Mathematics of Fluid Dynamics

Introductory Physics II for Biological Sciences

Physics courses for B A STAR program

Publications

Journals:

1. Rohde Poole, S. B. (2021). "Designing an Undergraduate Mathematical Modeling Course for Mathematics Majors and Minors." *PRIMUS*, 21. <https://www.tandfonline.com/doi/pdf/10.1080/10511970.2021.1931995?needAccess=true>
2. Poole, Shelley B. (2020). "Exercises Encouraging Creativity for Mathematical Modeling." Gary Froelich and Jessica Libertini (Ed.), Consortium: The Newsletter of the Consortium for Mathematics and Its Applications **119th ed.**, 1-4.
3. Rohde, S., Kim, A. D. (2017). "Backscattering of continuous and pulsed beams." *SIAM Multiscale Modeling and Simulation*, 15(4), 1356-1375.
4. Rohde, Shelley B. (2014). "Modeling diffuse reflectance measurements of light scattered by layered tissues", a dissertation by Rohde, Shelley B., Ph.D., UNIVERSITY OF CALIFORNIA, MERCED, 2014, 81 pages; 3627669.
5. Rohde, S. B. and Kim, A. D. (2013). "A convolution model of the diffuse reflectance for layered tissues," *Opt. Lett.* **39**, 154-157.
6. Rohde, S. B. and Kim, A. D. (2012) "Modeling the diffuse reflectance due to a narrow beam incident on a turbid medium," *J. Opt. Soc. Am. A* **29**, 231-238.

Conference Proceedings:

1. Poole, Shelley B. (2022). "The "Yes, and..." Approach to Teaching Mathematical Modeling" In Alan Rogerson and Jasia Morska (Ed.), Wiley. Mathematics Education for the Future Project.
2. Rohde, S., Kim, A. D. (2015). "Determining Optical Properties of Epithelial Tissues with an Obliquely Incident Beam." In Hamid Dehghani and Paola Taroni (Ed.), (OF ed., vol. 9538, pp. 6). SPIE.
3. Rohde, S., Kim, A. D. (2012). "Corrected Diffusion Approximation in Layered Tissues." (BTu3A.40 ed.). OSA Technical Digest (Optical Society of America, 2012).

Presentations*Contributed Talks*

1. August, 2022. *The “Yes, and...” Approach to Teaching Mathematical Modelling.* at the 16th International Conference of The Mathematics Education for the Future Project: *Building on the Past to Prepare for the Future.*
2. July 18, 2019. *Teaching Mathematical Modeling* at ICIAM in Valencia, Spain.
3. March 26, 2019. *Workshop on Getting Started with Undergraduate Research* at Rocky Mountain MAA Meeting as part of Section NExT with Clay Shonkwiler.
4. July 10, 2018. *Mathematical Modeling with Undergraduates* at the SIAM Applied Mathematics Education Conference in Portland, OR.
5. October 1, 2017. *Modeling Light Propagation in Tissues* at the SIAM Central States Section Meeting in Colorado State University, Fort Collins, CO.
6. January 7, 2017. *Balancing online work and written work in calculus and general studies courses* at the Joint Mathematics Meetings in Atlanta, GA.
7. June 24, 2015. *Determining Optical Properties of Epithelial Tissues with an Obliquely Incident Beam* at the European Conferences on Biomedical Optics: Diffuse Optical Imaging Conference in Munich, Germany.
8. May 20, 2012. *Corrected Diffusion Approximation in Layered Tissues* at SIAM Imaging Science conference in Philadelphia, PA.

Invited Talks

1. March 15, 2013. *The Corrected Diffusion Approximation* at California State University, Chico. A presentation of my research for the Physics faculty and students.
2. May 29, 2012. *Corrected Diffusion Approximation in Layered Tissues* in Portland, OR for the Optics Group held jointly by OHSU and Portland State University. A presentation of my current research.
3. September 30, 2011. *Modeling Light Propagation in Tissue* at California State University, Chico. A presentation of my research for the Mathematics faculty and students.
4. November 5, 2010. *Modeling Light Propagation in Tissue* at California State University, Chico. A presentation of my research for the Physics faculty and students.
5. November 10, 2009. *Applied Mathematics Graduate Studies* at California State University, Chico. A presentation about our faculty and Applied Mathematics graduate program for the Mathematics faculty and students. I also sat on a panel with other graduate students to discuss my experience as a graduate student at UC Merced.
6. November 2005. *Dancing Mathematics* at California State University, Chico. A fun presentation about math and dance for the faculty and students interested in mathematics.

Panelist

1. October 4, 2019. Panelist for *Graduate School Panel* for undergraduates at Metropolitan State University of Denver.
2. October 12, 2018. Panelist for *Graduate School Panel* for undergraduates at Metropolitan State University of Denver.
3. March 1, 2018. Panelist for *Teaching Panel* for their Society for Women in Mathematics at Colorado School of Mines.
4. October 20, 2017. Panelist for *Graduate School Panel* for undergraduates at Metropolitan State University of Denver.

5. February 25, 2017. Panelist for *Alumni Panel* at UC Merced's Graduate Visitation Weekend.
6. Fall 2005. Panelist for *Graduate School Panel* for undergraduates at California State University, Chico.

Poster

1. May 1, 2012. *Corrected Diffusion Approximation in Layered Tissues* at OSA BIOMED conference in Miami, FL.

Other Presentations

1. April 6, 2018. *Mathematical Modeling* at Metropolitan State University of Denver for faculty and students attending the Math Club Talk.
2. March 2, 2017. *Mathematical Modeling* at Metropolitan State University of Denver for faculty and students attending the Math Club Talk.
3. September 11, 2015. *Modeling Light Propagation in Biological Tissues* at Metropolitan State University of Denver for faculty and students attending the Math Club Talk.
4. March 31, 2010. *Foundations for using the Radiative Transport Equation to scan tissue for early-stage cancer cells* at University of California, Merced for the SAMPLE Seminar Series.
5. 2012. Sacramento Graduate Advocacy Day Student Representative to State Government.

Performance Collaborations

1. Fall 2018. Interdisciplinary work and artistic performance for the Health Institute Executive Update at Metropolitan State University of Denver. With Jacob Mora and Nicole Predki.
2. Spring 2018. Interdisciplinary work and artistic performance piece *A Study in Biomedical Photonics* with the Dance Repertory Class. With Jacob Mora and Nicole Predki.

Conferences and Workshops

(planned) 16th International Conference of The Mathematics Education for the Future Project: Building on the Past to Prepare for the Future, August 2022

(planned) SIAM Conference on Applied Mathematics Education concurrently with SIAM Annual Meeting, July 2022

Open Education Conference, October 2021

MAA Rocky Mountain Section Meeting, April 2021

REMOTE: The Connected Faculty Summit, July 2020

MAA Rocky Mountain Section Meeting, April 2020

Joint Mathematics Meetings, January 2020

International Congress on Industrial and Applied Mathematics, July 2019

MAA Rocky Mountain Section Meeting, April 2019

SIAM Conference on Applied Mathematics Education concurrently with SIAM Annual Meeting, July 2018

MAA Section NExT faculty development program, April 2018-March 2019.

MAA Rocky Mountain Section Meeting, April 2018

SIAM Central States Section Meeting, September 2017

Joint Mathematics Meetings, January 2017

SIAM Applied Mathematics Education Conference, September-October 2016

SIAM Annual Meeting concurrently with SIAM in the Life Sciences Conference July 2016

European Conferences on Biomedical Optics: Diffuse Optical Imaging, June 2015

Rocky Mountain MAA Section Meeting, April 2015

Joint Mathematics Meetings, January 2014

20th Annual Institute on Teaching and Mentoring, October-November 2013

SIAM Imaging Science Conference, May 2012
OSA BIOMED Conference, May 2012
Sacramento Graduate Advocacy Day, March 2012
Virtual Photonics Workshop, August 2011
CBST Retreat, July 2011
Virtual Photonics Workshop, September 2010
MSRI introductory workshop on inverse problems, August 2010
Women in Physics Conference, January 2007

Grants

1. Poole, S. B. (Principal), “Auraria Library’s Open Education Grant,” Sponsored by Auraria Library, Local, \$1,200.00. (January 2020 - July 2020). Funded development of open educational resources for Calculus I course.
2. Poole, S. B. (Principal), “LAS Professional Development Mini Grant,” Sponsored by MSU Denver College of Letters, Arts, and Sciences, Metropolitan State University of Denver, \$1,000.00. (Fall 2018 - Spring 2019). Funded research collaboration with Tiara Diamond on an astrophysics project.
3. Rohde, S. B. (Principal), “LAS Undergraduate Research Mini Grant,” Sponsored by MSU Denver College of Letters, Arts, and Sciences, Metropolitan State University of Denver, \$500.00. (Fall 2017 - Spring 2018). Funded competition fees for two student teams competing in MCM/ICM.
4. Rohde, S. B. (Principal), “LAS Undergraduate Research Mini Grant,” Sponsored by MSU Denver College of Letters, Arts, and Sciences, Metropolitan State University of Denver, \$500.00. (Fall 2016 - Spring 2017). Funded competition fees for three student teams competing in MCM/ICM.
5. Rohde, S. B. (Principal), “LAS Undergraduate Research Mini Grant,” Sponsored by MSU Denver College of Letters, Arts, and Sciences, Metropolitan State University of Denver, \$500.00. (Fall 2015 - Spring 2016). Funded competition fees for two student teams competing in MCM/ICM.
6. Rohde, S. B. (Principal), “LAS Professional Development Mini Grant,” Sponsored by MSU Denver College of Letters, Arts, and Sciences, Metropolitan State University of Denver, \$1,000.00. (Fall 2014 - Spring 2015). Funded research collaboration with Arnold D. Kim.

Professional Activities and Memberships

Professional Activities:

Faculty development program “Open Textbook Review Workshop” (October 11, 2019)
Faculty development program “Section NExT” through MAA Rocky Mountain section (April 2018-March 2019).
Engaged in a Faculty Learning Community on “Just in Time Teaching” (AY 2016-2017)
Engaged in a Faculty Learning Community on “Teaching with Technology” (AY 2016-2017)
Attended “Academic of Co-Curricular Assessment Forum” at MSU Denver (April 14, 2017)
Attended “CLEP & DSST Faculty Conference” in Denver, hosted by CDHE (November 4, 2016).
Engaged in a Faculty Learning Community on “Best Practices in University Teaching” (AY 2015-2016)
Attended an equity workshop hosted by our department and lead by faculty at Aurora Community College (April 10, 2015)
Attended a workshop on Just-in-Time Teaching, a For Faculty, By Faculty workshop through MSU Denver (October 2014).

Professional Memberships:

Society of Industrial and Applied Mathematics (SIAM)

SIAM Activity Group in Applied Mathematics Education
Secretary of the SIAM Activity Group in Applied Mathematics Education

Previous memberships: Optical Society of America (OSA), Association for Women in Mathematics (AWM), and Women in Science and Engineering (WiSE)
Founding President of UCM WiSE chapter (2010)
Board member for CSU, Chico Math Club (2005 - 2007)

Service

Advising in Undergraduate Research:

Advised undergraduate student research project in “Mathematical Applications of Optics.” (Spring 2019)
Advised and hosted a team of students competing in the SIMIODE Challenge Using Differential Equations Modeling IV. (2019)
Advised undergraduate student research project in “Mathematics of Light Propagation.” (Fall 2018)
Advised and hosted teams of students competing in the SIMIODE Challenge Using Differential Equations Modeling III. (Fall 2018)
Advised two undergraduate student research projects in “Mathematics of Fluid Dynamics” (Spring 2018)
Advised undergraduate student research project in “Mathematics of Protein Folding” (Spring 2018)
Advised and hosted teams of students competing in the SIMIODE Challenge Using Differential Equations Modeling II. (Spring 2018)
Advised two teams of students competing in the Mathematical Contest in Modeling 2018.
Advised three teams of students competing in the Mathematical Contest in Modeling 2017. One ‘Meritorious Winner’ and one ‘Honorable Mention’
Advised two teams of students competing in the Mathematical Contest in Modeling 2016. One team received ‘Meritorious Winner’ for their solution. Co-Adviser with Benjamin Dyhr for a team of students competing in the Mathematical Contest in Modeling 2015. Team received an ‘Honorable Mention’ for their solution.

Committees and other service positions:

Member of LAS Professional Development Committee (Fall 2021-present and Fall 2017-Spring 2019)
Chair of Calculus Committee (Fall 2019-present)
Chair of General Studies Assessment for department (Fall 2019-present)
Chair of Applied Mathematics Group (Fall 2018-present)
Faculty Advisor for Credit by Exam (Fall 2017-present)
Chair of department Assessment Committee (Fall 2016-present)
Member of College Algebra through Modeling Committee (Fall 2016-present)
Course Coordinator for MTH 1120 - College Trigonometry (January 2016-present)
Member of Calculus Assessment Committee (Spring 2016-present)
Member of College Algebra Committee (Fall 2014-present)
Member of Faculty Senate (Fall 2016-Spring 2020)
Member of Faculty Senate General Studies Committee (Fall 2016-Spring 2020)
Marshal at Commencement (Spring 2015-Spring 2019)
Member of Calculus Committee (Fall 2014-Spring 2019)
Member of Hiring Committee (Fall 2018-Spring 2019)
Judge at the Denver Science Fair February 2016, 2017, 2018, and 2019
Judge for M3 Challenge 2017, 2018, and 2019
Judge for MCM 2019
Chair of Committee to form a Mathematical Modeling Course (Fall 2014-Fall 2018)
Judge for AWM poster session at Conference in Portland, OR. July 2018
Chair of Hiring Committee (Fall 2017-Spring 2018)

Member of University Advisory Council for Academic Advising (Fall 2016-Spring 2018)
Member of Applied Mathematics Group (Fall 2014-Spring 2018)
Textbook Co-Coordinator for department (Spring 2015-Spring 2018)
Chair of Numerical Analysis Textbook Committee (Spring 2017-Fall 2017)
Co-Chair of the General Studies Moratorium Task Force (Spring 2017)
Member of the University Grade Appeal Committee (Spring 2017)
Representative for department at Math Day on MSU Denver campus (Spring 2017)
Judge for AWM poster session at JMM Conference in Atlanta, GA. 2017
Advisory board member for Colorado Community College System Committee revising the Calculus Course Competencies/Outcomes. 2016-2017
Discussant to provide feedback on IP Guides for MAA. 2017
Member of Assessment Committee (Spring 2016-Fall 2016)
Judge and representative of department at Math Day on MSU Denver campus (Spring 2016)
