

Department of Mathematics and Statistics  
Metropolitan State University of Denver  
P.O. Box 173362, Campus Box 38; Denver, CO 80217-3362

srohde2@msudenver.edu  
<http://www.shelleyrohde.com>  
303-615-0756

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**Teaching Interests**

Calculus, mathematical modeling, differential equations, numerical analysis, and linear algebra

**Research Interests**

Light propagation in biological tissues, mathematical modeling, 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

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**Teaching Experience**

Mathematical Modeling

Numerical Analysis I

Numerical Analysis II

Differential Equations

Partial Differential Equations

Mathematical Applications of Optics

Mathematics of Light Propagation

Mathematics of Protein Folding

Mathematics of Fluid Dynamics

Calculus I

Calculus II

Calculus III

College Trigonometry

College Algebra

College Algebra through Modeling

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### Research Experience

*Doctoral Research:* Applied Mathematics Unit, University of California, Merced

Advisor: Arnold D. Kim, 2007-2014

Modeling diffuse reflectance measurements due to near infrared light propagation in biological tissues

*Undergraduate Research:* Department of Mathematics and Statistics, California State University, Chico

Advisor: Thomas McCready, 2006-2007

Fluid dynamics and viscous fluid flow

*Undergraduate Research:* Department of Physics, California State University, Chico

Advisor: Eric Ayars, 2006-2007

Experimental work studying phonons with a designed lattice structure

*Undergraduate Research:* Department of Mathematics and Statistics, California State University, Chico

Advisor: Thomas Mattman, 2004

Summer REU on knot theory

### Publications

*Journals:*

1. Rohde, S., Kim, A. D. (2017). Backscattering of continuous and pulsed beams. *SIAM Multiscale Modeling and Simulation*, 15(4), 1356-1375.
2. "Modeling diffuse reflectance measurements of light scattered by layered tissues", by Rohde, Shelley B., Ph.D., UNIVERSITY OF CALIFORNIA, MERCED, 2014, 81 pages; 3627669.
3. S. B. Rohde and A. D. Kim, "Modeling the diffuse reflectance due to a narrow beam incident on a turbid medium," *J. Opt. Soc. Am. A* **29**, 231-238 (2012).
4. S. B. Rohde and A. D. Kim, "A convolution model of the diffuse reflectance for layered tissues," *Opt. Lett.* **39**, 154-157 (2014).

*Conference Proceedings:*

1. 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.
2. Rohde, S., Kim, A. D. (2012). "Corrected Diffusion Approximation in Layered Tissues." (BTu3A.40 ed.). OSA Technical Digest (Optical Society of America, 2012).

**Presentations***Invited Talks*

1. March 2, 2017. *Mathematical Modeling* at Metropolitan State University of Denver for faculty and students attending the Math Club Talk.
2. September 11, 2015. *Modeling Light Propagation in Biological Tissues* at Metropolitan State University of Denver for faculty and students attending the Math Club Talk.
3. March 15, 2013. *The Corrected Diffusion Approximation* at California State University, Chico. A presentation of my research for the Physics faculty and students.
4. 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.
5. September 30, 2011. *Modeling Light Propagation in Tissue* at California State University, Chico. A presentation of my research for the Mathematics faculty and students.
6. November 5, 2010. *Modeling Light Propagation in Tissue* at California State University, Chico. A presentation of my research for the Physics faculty and students.
7. 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.
8. 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.
9. November 2005. *Dancing Mathematics* at California State University, Chico. A fun presentation about math and dance for the faculty and students interested in mathematics.

*Invited 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.

*Contributed Talks*

1. July 18, 2019. *Teaching Mathematical Modeling* at ICIAM in Valencia, Spain.
2. March 26, 2019. *Workshop on Getting Started with Undergraduate Research* at Rocky Mountain MAA Meeting as part of Section NExT with Clay Shonkwiler.
3. July 10, 2018. *Mathematical Modeling with Undergraduates* at the SIAM Applied Mathematics Education Conference in Portland, OR.
4. October 1, 2017. *Modeling Light Propagation in Tissues* at the SIAM Central States Section Meeting in Colorado State University, Fort Collins, CO.

5. January 7, 2017. *Balancing online work and written work in calculus and general studies courses* at the Joint Mathematics Meetings in Atlanta, GA.
6. 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.
7. May 20, 2012. *Corrected Diffusion Approximation in Layered Tissues* at SIAM Imaging Science conference in Philadelphia, PA.

*Other Presentations*

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.
3. 2012. Sacramento Graduate Advocacy Day Student Representative to State Government.
4. May 1, 2012. *Corrected Diffusion Approximation in Layered Tissues* at OSA BIOMED conference in Miami, FL.

**Conferences and Workshops**

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

**Professional Activities and Memberships***Professional Activities:*

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)

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)

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**Service**

*Advising in Undergraduate Research:*

Advised and hosted a team of students competing in the SIMIODE Challenge Using Differential Equations Modeling IV. (2019)

Advised and hosted teams of students competing in the SIMIODE Challenge Using Differential Equations Modeling III. (2018)

Advised and hosted teams of students competing in the SIMIODE Challenge Using Differential Equations Modeling II. (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:*

Course Coordinator for MTH 1120 - College Trigonometry (January 2016-present)

Chair of department Assessment Committee (Fall

Judge at the Denver Science Fair February 2016, 2017, 2018, and 2019

Judge for M3 Challenge 2017, 2018, and 2019

Judge for MCM 2019

Judge for AWM poster session at Conference in Portland, OR. July 2018

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