

Department of Mathematical and Computer Sciences
Metropolitan State University of Denver
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Teaching Interests

Calculus, Differential Equations, Numerical Analysis, Mathematical Modeling, and Linear Algebra

Research Interests

Light propagation in biological tissues, numerical analysis, differential equations, asymptotic and perturbation analysis, biomedical optics, and photonics

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

B.S. 2007 in Applied Mathematics

California State University, Chico

Minors in Physics and Theatre

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

Teaching Experience**Lead Instructor**

Numerical Analysis II, Calculus I, and College Algebra through Modeling January 2017-May 2017

Mathematical Modeling, Numerical Analysis I, and College Algebra through Modeling August 2016-December 2016

Numerical Analysis II, Partial Differential Equations, and Calculus II January 2016 - May 2016

Numerical Analysis I, Calculus III, and College Algebra through Modeling August 2015 - December 2015

Calculus II and College Trigonometry June 2015 - July 2015

Calculus III, Calculus II, College Trigonometry and College Algebra January 2015 - May 2015

Calculus III and College Algebra August 2014 - December 2014

Vector Calculus January 2012 - May 2012

Teaching Fellow, Advanced Teaching Assistant

Calculus II August 2013 - December 2013

Partial Differential Equations January 2013 - May 2013

Vector Calculus August 2012 - December 2012, additional duties: held one lecture

Vector Calculus January 2011 - May 2011

Teaching Assistant

Numerical Analysis II January 2010 - May 2010, additional duties: held 3 lectures

Numerical Analysis I August 2009 - December 2009

Calculus II June 2009 - August 2009

Introductory Physics II for Biological Sciences January 2009 - May 2009

Numerical Analysis I August 2008 - December 2008

Calculus I June 2008 - August 2008, additional duties: prepared all discussion worksheets and quizzes

Vector Calculus January 2008 - May 2008

Differential Equations and Linear Algebra August 2007 - December 2007

Assistant Facilitator, Teaching Assistant

Physics course in B A STAR program June 2007 - August 2007

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. S. B. Rohde and A. D. Kim, "Backscattering of Continuous and Pulsed Beams", SIAM MMS *in press*.
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.

Contributed Talks

1. January 7, 2017. *Balancing online work and written work in calculus and general studies courses* at the Joint Mathematics Meetings in Atlanta, GA.
2. 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.
3. May 20, 2012. *Corrected Diffusion Approximation in Layered Tissues* at SIAM Imaging Science conference in Philadelphia, PA.

Poster Presentations

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

Conferences and Workshops

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:

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 “Just in Time Teaching” (AY 2016-2017)

Engaged in a Faculty Learning Community on “Teaching with Technology” (AY 2016-2017)

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), Optical Society of America (OSA)

Previous memberships: 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:

Advising two teams of students competing in the Mathematical Contest in Modeling 2016.

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:

I am designing a course in Mathematical Modeling for our applied mathematics majors. This course was noted in our previous department review as a course we need to make available to our majors, and is also a course I am excited to teach. We will offer it as an omnibus course in Fall 2016.

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

Serving on the calculus committee, college algebra and trigonometry committee, applied mathematics committee, assessment committee, and calculus assessment committee.

Judge at the Denver Science Fair (February 2016)

Academic Honors During Graduate Studies

Dean’s Distinguished Fellowship January 2014 - May 2014

SREB-State Doctoral Scholars AGEP Scholar at the 20th Annual Institute on Teaching and Mentoring (2013)

Graduate Research Assistant May 2013 - August 2013, May 2011-January 2012, August 2009-January 2011, and December 2008-June 2009

GRC Graduate Student Summer Research Fellowship (2012)

Spring 2012 Graduate Division General Fellowship

Certificate of Achievement in Research and Teaching (2012)

Sacramento Graduate Advocacy Day Student Representative (2012)