Colin Roberts

Colorado State University
Department of Mathematics
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Education

Graduate Education Aug. 2017 - Present
Colorado State University
Mathematics Ph.D. Program

Undergraduate Education Aug. 2012 - May 2017
Colorado State University
Bachelor of Science in General Mathematics & Physics

Published Works

3. A. Albarakati, M. Budisic, R. Crocker, J. Glass-Klaiber, S. Iams, J. Maclean, N. Marshall, C. Roberts, and E. S. Van Vleck, *Model and Data Reduction for Data Assimilation: Particle Filters Employing Projected Forecasts and Data with Application to a Shallow Water Model*," (2021) submitted.

2. Brooks Adams, Henry Adams, and Colin Roberts, *Sweeping Costs of Planar Domains*, In Erin W Chambers, Brittany T Fasy, and Lori S Ziegelmeier, eds., *Research in Computational Topology*, pages 71-92, AWM Springer series, volume 13, 2018.

1. Jonathan Gilbert, Colin Roberts, and Jacob Roberts, *Near-Resonant Light Propagation in an Absorptive Spatially Anisotropic Ultracold Gas*, Journal of the Optical Society of America B, pages 718–723, volume 25, number 4, 2018.

Research Experience

NASA Internship Program; Space Communications and Navigation - 2021.

AIM Summer School on Dynamics, Data, and the COVID-19 Pandemic - Supported by the NSF, 2020.

Mathematics and Climate Research Network Summer School and Academic Year Engagement Program - Supported by the NSF and AIM, 2019.

Organization and Service

Graduate Student Council Representative	Aug. 2020 - Aug. 2021
Liaison for SIAM Chapter at Colorado State University	Aug. 2019 - May 2020
Presenter for Math Jam Junior at Windsor Charter Academy	Dec. 19, 2019.
Mentor Meetup with Graduate Center for Inclusive Mentoring at Colorado State University	Nov. 4, 2019
Mentor for Association for Women in Mathematics at Colorado State University	Aug. 2019 - Dec. 2019
Organizer for Lie Theory Reading Group	Oct. 2019 - Dec. 2019
Founder/Organizer of the Mathematical Physics Lab	Aug. 2018 - May 2019
Co-organizer for the Greenslopes graduate seminar	Jan. 2019 - May 2019
President of the Society of Physics Students chapter at Colorado State University	Aug. 2016 - May 2017
Voting member for physics for the College Council for the College of Natural Sciences	Aug. 2015 - Dec. 2016
Tutor for the physics department at Colorado State University	Mar. 2015 - May 2016

Research Talks

Clifford Analysis and a Noncommutative Gelfand Representation. Ph.D. Preliminary Exam, Colorado State University, April 8$^{\text{th}}$, 2021

Model and Data Reduction Techniques for Data Assimilation. SIAM Northern States Sections Student Chapters Conference (NSS-SC), October 16$^{\text{th}}$, 2020

A Multiscale Approach to Modeling University Impact on municipal COVID-19 dynamics. Greenslopes graduate student seminar at Colorado State University, August 27$^{\text{th}}$, 2020

Model and Data Reduction Techniques for Data Assimilation. SIAM Mathematics of Planet Earth (MPE20), August 11$^{\text{th}}$, 2020

Riemannian Geometry for Dummies. Greenslopes graduate student seminar at Colorado State University, January 30$^{\text{th}}$, 2020

Geometric Algebra and Spinors. Solving Problems in Applied Mathematics at Colorado State University, October 21$^{\text{st}}$, 2019

Information and Entropy. Data Science Seminar at Colorado State University, September 19$^{\text{th}}$, 2019

Differential Forms and Stokes' Theorem in $\mathbb{R}^3$. Greenslopes graduate student seminar at Colorado State University, September 6$^{\text{th}}$, 2019

Tensor Structures on Manifolds. Tensors: Algebra-Computation-Applications (TACA-2019), June 13$^{\text{th}}$, 2019

The Principle of Least Action and Variational Methods. Mathematical Physics Lab at Colorado State University, April 23rd, 2019

Tensors and Exterior Algebra. Greenslopes graduate student seminar at Colorado State University, March 14th, 2019

Special Relativity. Mathematical Physics Lab at Colorado State University, January 29th, 2019

Incompressible Fluid Flow: Arnold's Geometrical Approach. Solving Problems in Applied Mathematics Seminar at Colorado State University, November 6th, 2018

Introduction to Riemannian Geometry, Part 2. Mathematical Physics Lab at Colorado State University, October 16th, 2018

Introduction to Riemannian Geometry, Part 1. Mathematical Physics Lab at Colorado State University, October 9th, 2018

Teaching

Instructor: Chemistry 384, *Supervised College Teaching*	FA 2021
Instructor: Math 271, *Applied Mathematics for Chemists I*	FA 2021
Instructor: Chemistry 384, *Supervised College Teaching*	SP 2021
Instructor: Math 272, *Applied Mathematics for Chemists II*	SP 2021
Instructor: Math 271, *Applied Mathematics for Chemists I*	FA 2020
Instructor: Math 272, *Applied Mathematics for Chemists II*	SP 2020
Instructor: Math 271, *Applied Mathematics for Chemists I*	FA 2019
Course Development: Math 118, *College Algebra in Context II*	SM 2019
Instructor: Math 255, *Calculus for Biological Scientists II*	SP 2019
Instructor: Math 155, *Calculus for Biological Scientists I*	FA 2018
Instructor: Math 340, *Introduction to Ordinary Differential Equations*	SM 2018
Instructor: Math 160, *Calculus for Physical Scientists I*	SP 2018
Instructor: Math 161, *Calculus for Physical Scientists II*	FA 2017
Learning Assistant: PH 141, *Physics for Scientists and Engineers I*	FA 2015

Awards and Honors

Louis and Gladys Weber Scholarship	2016
Donovan B. and Sally S. Hicks Scholarship	2016
Colorado State Honors Scholarship	2012-2016

Western Undergraduate Exchange Scholarship 2012-2016

College of Natural Sciences Dean's List Fall 2014, Fall 2015

Workshops and Research Meetings Attended

AIM Summer School on Dynamics, Data, and the COVID-19 Pandemic, 2020

MCRN Summer School and Academic Year Engagement Program, 2019

Biology, Analysis, Geometry, Energies, Links [BAGEL19]: A Program on Low-dimensional Topology, Geometry, and Applications, 2019

Tensors: Algebra-Computation-Applications (TACA), 2019

Professional Affiliations

Member: American Mathematical Society

Member: Society for Industrial and Applied Mathematics

Member: American Physical Society

Member: American Association for Physics Teachers

Member: Sigma Pi Sigma Honors Physics Fraternity

Advisor

Name	Clayton Shonkwiler
Department	Colorado State Mathematics
Position	Assistant Professor
Contact	clayton.shonkwiler@colostate.edu

Committee

Name	Henry Adams
Department	Colorado State Mathematics
Position	Assistant Professor
Contact	henry.adams@colostate.edu

Name Wolfgang Bangerth
Department Colorado State Mathematics
Position Professor
Contact wolfgang.bangerth@colostate.edu

Name Jacob Roberts
Department Colorado State Physics
Position Professor, Department Chair
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