Kit Newton

University of Wisconsin-Madison

Department of Mathematics

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Education

University of Wisconsin-Madison

Ph.D. Candidate, Physics, 2016-Present. Expected completion date: May 2020 Field: Computational Mathematics

Adviser: Qin Li

M.A., Mathematics, December 2018

M.A., Physics, May 2018

Reed College

B.A., Physics, 2016.

Thesis: Bohmian Mechanics and Magnetism: A Computational Approach

Adviser: Joel Franklin

Publications

Q. Li, R.-Y. Lai, L. Wang, and K. Newton,

Stability deterioration of linear and nonlinear optical tomography in the Bayesian framework in preparation.

K. Chen, Q. Li, K. Newton, and S. Wright

Structured random sketching for PDE inverse problems

Submitted October 2019.

E-print: https://arxiv.org/abs/1909.11290.

Q. Li and K. Newton,

Diffusion equation assisted Markov chain Monte Carlo methods for the inverse radiative transfer equation.

Entropy 21 (3) 2019.

E-print: https://www.mdpi.com/1099-4300/21/3/291.

K. Newton, Q. Li, and A. Stuart,

Diffusive optical tomography in a Bayesian framework.

Submitted February 2019

E-print: https://arxiv.org/abs/1902.10317.

J. Franklin and K. Cole Newton,

Classical and quantum mechanical motion in magnetic fields.

American Journal of Physics 84 (263) 2016

E-print: https://arxiv.org/abs/1603.01211.

J. Franklin, Y. Guo, K. Cole Newton, and M. Schlosshauer,

The dynamics of the Schrödinger-Newton system with self-field coupling.

Classical and Quantum Gravity 33 (7), 2016

E-print: https://arxiv.org/abs/1603.03380

Presentations

"Stability of diffuse optical tomography in the optically thick case" Mini-symposium, ICIAM University of Valencia, July 2019.

"Two-level MCMC methods for diffuse optical tomography" AWM Symposium Rice University, April 2019.

"A Bayesian perspective on diffuse optical tomography" Applied and Computational Math Seminar Dartmouth College, April 2019.

"Diffusion equation-assisted MCMC methods for the inverse radiative transfer equation" JMM AWM poster session Baltimore, MD, January 2019.

"Diffuse optical tomography in the Bayesian framework" AMS Fall Southeastern Sectional Meeting: Validation and Verification Strategies in Multiphysics Problems University of Arkansas, November 2018.

"Diffusive optical tomography in the Bayesian framework" (Poster) IMA: Recent advances in Machine Learning and Computational Methods for Geoscience University of Minnesota, October 2018.

"Diffusive optical tomography in a Bayesian framework" (Poster) ICERM: Advances in PDEs: Theory, Computation, and Application to CFD Brown University, August 2018.

"Diffusive optical tomography in a Bayesian framework" Institute for Foundations of Data Science Student Workshop University of Wisconsin-Madison, April 2018.

"Towards a new numerical method for solving the Bethe ansatz equations" Quantum Effects on Precision Cosmological Experiments Los Alamos National Labs, August 2017.

"Revival times for a supersymmetric coherent state" (Poster) Conference for Undergraduate Women in Physics Oregon State University, January 2016

"Revival times for a supersymmetric coherent state" (Poster) Conference Experience for Undergraduates APS Division of Nuclear Physics, October 2015

Teaching

Department of Physical Science, Madison Area Technical College Instructor, College Physics I, Fall 2019.

Department of Mathematics, University of Wisconsin-Madison Teaching assistant and coordinator, Calculus III, Fall 2019.

Department of Mathematics, University of Wisconsin-Madison Teaching assistant and coordinator, Calculus II, Fall 2018.

College of Engineering, University of Wisconsin-Madison Engineering Summer Program Instructor, Precalculus, Summer 2018.

Department of Mathematics, University of Wisconsin-Madison Teaching Assistant, Calculus I, Spring 2018.

Department of Physics, University of Wisconsin-Madison

Teaching Assistant, Electricity and Magnetism for Engineers, Fall 2017.

Department of Physics, Reed College

Grader, Quantum Mechanics II, 2016 Tutor/Grader, Mathematical Methods for Physics, 2014-2016 Tutor/Grader, Introduction to Modern Physics, 2014-2016 Tutor, Introduction to Mechanics, 2014-2016 Tutor, Introduction to Electricity and Magnetism, 2014-2016

Department of Mathematics, Reed College

Tutor, Calculus, 2014-2016 Tutor, Introduction to Analysis, 2014-2016 Tutor, Multivariable Calculus I and II, 2014-2016 Teaching Assistant, Introduction to Computing, 2014-2016

Fellowships

University Fellowship

Department of Physics University of Wisconsin-Madison, 2016-2017

Graduate School Fellowship

Department of Physics University of Wisconsin-Madison, 2016

Firminhac Fellowship for Women in Physics

Department of Physics University of Wisconsin-Madison, 2016

Outreach and Service

Co-organizer

Applied Kinetic Theory for Junior Researchers Conference University of Wisconsin-Madison, April 19-21, 2019.

Volunteer

Girls Math Night Out

September 2018 - December 2018

Speaker

Madison Math Circle October 2018

Mentor

Directed Reading Program

September 2018 - December 2018

President and Founder

Out in Science, Technology, Engineering, and Mathematics at UW-Madison July 2017 - July 2018

Volunteer

Expanding Your Horizons

November 2017

Seminar Series Coordinator

Women and Gender Minorities in Physics

September 2016 - July 2018

Awards and Honors

John A. Nohel Prize in Applied Mathematics

University of Wisconsin, 2019.

Elizabeth Hirschfelder Prize

University of Wisconsin, 2019.

Mid-Career TA award

University of Wisconsin-Madison, 2019.

Phi Beta Kappa

Reed College, 2016.

Commendation for Excellence

Reed College, 2013 and 2015.

Languages and Skills

English (native), French (advanced) LATFX, MATLAB, Mathematica