Kit Newton

University of Wisconsin-Madison
Department of Mathematics

kcnewton@math.wisc.edu
(408)891-0929

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

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)
LaTeX, MATLAB, Mathematica