

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.
accepted, SIAM-MMS, January 2020
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, Fall 2019

College Physics I.

Department of Mathematics, University of Wisconsin-Madison

Teaching Assistant, 2018-2019

Calculus I, II, and III.

- Selected as a TA coordinator twice.
- Received math department's highest "Superior" ranking for every course.

College of Engineering, University of Wisconsin-Madison

Instructor, Engineering Summer Program, Summer 2018

Precalculus.

Department of Physics, University of Wisconsin-Madison

Teaching Assistant, Fall 2017

Electricity and Magnetism for Engineers.

Department of Physics, Reed College

Tutor/Grader, 2014-2016

Quantum Mechanics II, Mathematical Methods for Physics,

Introduction to Modern Physics, Intro to Mechanics, Intro to Electricity and Magnetism.

Department of Mathematics, Reed College

Tutor/TA, 2014-2016

Calculus, Intro to Analysis, Multivariable Calculus I and II, Intro to Computing.

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)
 \LaTeX , MATLAB, Mathematica