Ross Hamilton Parker

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EDUCATION

Brown University — Providence, RI
Ph.D. in applied mathematics — *Dec 2019*
Advisor: Björn Sandstede
Thesis: Nonlinear waves in the fifth-order Korteweg-de Vries equation

CUNY Hunter College — New York, NY
M.A. in pure mathematics — *Jan 2013*

University of Pennsylvania School of Medicine — Philadelphia, PA
M.D. — *May 2009*

Bowdoin College — Brunswick, ME
B.A. summa cum laude with highest honors in music, minor in chemistry — *May 1998*
Thesis: The First Service of Thomas Morley: an edition, performance, and commentary

ACADEMIC AND PROFESSIONAL APPOINTMENTS

Southern Methodist University — Dallas, TX
RTG postdoctoral fellow / visiting professor — *Aug 2020 - present*

Brown University — Providence, RI
Visiting assistant professor / Deans' faculty fellow — *Sep 2019 - May 2020*
Full fellowship support for the fall semester, and appointment as a visiting assistant professor for the spring semester.

Columbia University Medical Center — New York, NY
Internship in internal medicine — *Jul 2009 - Jul 2010*

PUBLICATIONS AND PREPRINTS

[1] Ross Parker and Andrea K. Barreiro. Bifurcations of a neural network model with symmetry. 2022. arXiv:2201.02713.

[2] Ross Parker, P. G. Kevrekidis, and Alejandro Aceves. Stationary multi-kinks in the discrete sine-Gordon equation. *Nonlinearity*, 35(2):1036–1060, February 2022. doi:10.1088/1361-6544/ac3f8d.

[3] Ross Parker, Jesús Cuevas-Maraver, P. G. Kevrekidis, and Alejandro Aceves. Floquet solitons in square lattices: Existence, stability and dynamics. December 2021. arXiv:2112.04972.

[4] Ross Parker and Alejandro Aceves. Standing-wave solutions in twisted multicore fibers. *Physical Review A*, 103:053505, May 2021. doi:10.1103/PhysRevA.103.053505.

[5] Ross Parker and Alejandro Aceves. Multi-pulse solitary waves in a fourth-order nonlinear Schrödinger equation. *Physica D: Nonlinear Phenomena*, 422:132890, March 2021. doi:10.1016/j.physd.2021.132890.

[6] Efstathios G. Charalampidis, Ross Parker, Panayotis G. Kevrekidis, and Stéphane Lafortune. The stability of the b-family of peakon equations. *arXiv e-prints*, December 2020. arXiv:2012.13019.

[7] Ross Parker and Björn Sandstede. Periodic multi-pulses and spectral stability in Hamiltonian PDEs with symmetry. *arXiv e-prints*, October 2020. arXiv:2010.05728.

[8] Todd Kapitula, Ross Parker, and Björn Sandstede. A reformulated Krein matrix for star-even polynomial operators with applications. *SIAM Journal on Mathematical Analysis*, 52(5):4705–4750, September 2020. doi:10.1137/19M124246X.

[9] Ross Parker, P.G. Kevrekidis, and Björn Sandstede. Existence and spectral stability of multi-pulses in discrete Hamiltonian lattice systems. *Physica D: Nonlinear Phenomena*, 408:132414, July 2020. doi:10.1016/j.physd.2020.132414.

TEACHING

Southern Methodist University

Math 3302: Calculus III: multi–variable and vector calculus	Spring 2022
Math 3311: Introduction to proof and analysis	Fall 2021
Math 3304: Introduction to linear algebra	Spring 2021
Math 1337: Calculus I	Fall 2020

Brown University

APMA 1360: Applied dynamical systems	Spring 2020
Intensive review of analysis for incoming graduate students	Summer 2019
APMA 1650: Statistical inference I	Summer 2016
APMA 350: Applied ordinary differential equations (teaching assistant)	Spring 2016
APMA 1650: Statistical inference I (teaching assistant)	Fall 2015

Pedagogy Training

Course design seminar. Sheridan Center for Teaching and Learning, Brown University 2019
Explored integrated course design principles, and developed syllabi, assignments, and activities for two courses.

Teaching consultant program. Sheridan Center for Teaching and Learning, Brown University 2017
Developed and refined skills in peer observation and feedback, leadership, and discussion facilitation.

Reflective teaching program. Sheridan Center for Teaching and Learning, Brown University 2015
Developed and refined fundamental teaching and assessment strategies and communication skills using a student-centered, evidence-based approach.

Mentoring

Summer REU. Department of Mathematics, Southern Methodist University July 2021
Mentored nine undergraduate students in independent research projects on coupled oscillators, including the FPUT model and the Kuromoto model.

Directed Reading Program. Division of Applied Mathematics, Brown University 2019
Mentored undergraduates students in an independent reading project on the application of dynamical systems to neuroscience.

Other

Mathematics tutor. Noyce Scholars program, CUNY Hunter College 2011 - 2013
Tutored students in a scholarship program for future secondary school math teachers in calculus, differential equations, linear algebra, abstract algebra, real and complex analysis, probability, and numerical methods.

Teaching and laboratory assistant. Bowdoin College 1995 - 1998
Introductory chemistry, physics, and music theory.

PRESENTATIONS

Invited Talks

Multi-kinks and multi-breathers in the discrete sine-Gordon equation — Athens, GA
IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena — *30 Mar-1 Apr, 2022*

Standing-wave solutions in twisted multicore fibers — South Padre Island, TX
4th Annual Meeting of the SIAM Texas-Louisiana Section — *5-7 Nov, 2021*

Periodic multi-pulses in Hamiltonian systems with symmetry — Virtual
SIAM Conference on Applications of Dynamical Systems 2021 — *23-27 May, 2021*

Instability bubbles for periodic multi-pulse solutions to Hamiltonian systems — Virtual
3rd Annual Meeting of the SIAM Texas-Louisiana Section — *18 Oct, 2020*

Multi-pulse solitary waves in Hamiltonian systems — Virtual
SMU Math Colloquium — *24 Sep, 2020*

Spectral stability of periodic multi-pulses in the 5th Order KdV equation — Snowbird, UT
SIAM Conference on Applications of Dynamical Systems 2019 — *19-23 May, 2019*

Spectral stability of multi-pulses via the Krein matrix — Athens, GA
IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena — *17-19 Apr, 2019*

Stability of double pulse solutions to the 5th order KdV equation — Amherst, MA
Applied Mathematics Colloquium, University of Massachusetts — *13 Feb, 2018*

Stability of double pulse solutions to the 5th order KdV equation — Boston, MA
Brown/BU Joint Dynamics and PDE Seminar — *30 Nov, 2017*

Contributed Talks

Solitons and multi-solitons: a spatial dynamics approach — Providence, RI
SIAM Math Slam, Brown University — *8 Nov, 2018*

Stability of double pulse solutions to the 5th order KdV equation — Providence, RI
Applied Mathematics Graduate Seminar, Brown University — *11 Dec, 2017*

Posters and Multimedia Presentations

Spectral stability of multi-pulse solutions to the suspension bridge equation — Columbia, MO
KuMuNu 2019 — *27-28 Apr, 2019*

Spectral stability of multi-pulse solutions to the suspension bridge equation — Evanston, IL
Dynamics Days 2019 — *4-6 Jan, 2019*

Stability of double pulse solutions to the 5th order KdV equation — Anaheim, CA
SIAM Conference on Nonlinear Waves and Coherent Structures 2018 — *11-14 Jun, 2018*

Stability of double pulse solutions to the 5th order KdV equation — Lawrence, KS
KuMuNu 2018 — *21-22 Apr, 2018*

Stability of double pulse solutions to the 5th order KdV equation — Denver, CO
Dynamics Days 2018 — *4-6 Jan, 2018*

Conway's Game of Lights — New York, NY
New York World Maker Faire 2013 — *21-22 Sep, 2013*
Evolving cellular automata displayed on a 10×20 grid of individually addressable RGB LEDs, controlled by Arduino and Rasbperry Pi microcontrollers

JOURNALS REFEREED

Physica D: Nonlinear Phenomena

WORKSHOPS

Brown-ICERM-Kobe Summer Simulation School *17-31 Aug, 2015*
Workshop on high performance computing in collaboration with Kobe University, Japan

OUTREACH AND SERVICE

Minisymposium organizer South Padre Island, TX
4th Annual Meeting of the SIAM Texas-Louisiana Section *Nov 2021*
Dispersive wave equations with applications in optics and fluids

Minisymposium co-organizer Virtual
SIAM Conference on Applications of Dynamical Systems 2021 *May 2021*
MS6: Coherent structures in dispersive systems

Co-organizer Providence, RI
Brown/BU/UMass joint dynamical systems and PDE seminar *2019 - 2020*

Minisymposium co-organizer Snowbird, UT
SIAM Conference on Applications of Dynamical Systems 2019 *May 2019*
MS20: Existence and stability of nonlinear waves: theory and numerical computations

Co-organizer, weekly graduate student seminar Providence, RI
Division of Applied Mathematics, Brown University *2018 - 2019*

Review session leader, real analysis Providence, RI
Division of Applied Mathematics, Brown University *2017 - 2020*

Vice president Providence, RI
Brown University SIAM student chapter *2017 - 2019*

Small group discussion leader, reflective teaching seminar Providence, RI
Sheridan Center for Teaching and Learning, Brown University *2017*

Department liaison Providence, RI
Sheridan Center for Teaching and Learning, Brown University *2015 - 2020*

Co-chair, Pinewoods Scottish Sessions Boston, MA
Royal Scottish Country Dance Society, Boston Branch *2018*

Co-chair, Pinewoods Scottish Sessions Boston, MA
Royal Scottish Country Dance Society, Boston Branch *2017*

TRAVEL GRANTS

SIAM student travel award *23-27 May, 2021*
Attendance and minisymposium presentation at SIAM Conference on Applications of Dynamical Systems 2021 (virtual)

SIAM student travel award *19-23 May, 2019*
Attendance and minisymposium presentation at SIAM Conference on Applications of Dynamical Systems 2019

Brown University graduate school travel award *17-19 April, 2019*
Attendance and minisymposium presentation at IMACS 2019

Brown University graduate school travel award *11-14 June, 2019*
Attendance and poster presentation at SIAM Conference on Nonlinear Waves and Coherent Structures 2018

HONORS AND AWARDS

Alpha Omega Alpha University of Pennsylvania
Medical honor society *2008*

Phi Beta Kappa Bowdoin College
Undergraduate honor society *1998*

Sue Winchell Burnett Senior Prize in Music Bowdoin College
Awarded to the senior who has made the most significant contribution to the department *1998*

Edwin Herbert Hall Sophomore Prize in Physics Bowdoin College
Awarded to the best sophomore scholar in the field of physics *1996*

CRC First Year Prize in Chemistry Bowdoin College
Recognizes outstanding achievement and promise in chemistry *1995*