

Ross Hamilton Parker

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EDUCATION

Brown University

Ph.D. in applied mathematics

Advisor: Björn Sandstede

Thesis: Nonlinear waves in the fifth-order Korteweg-de Vries equation

Providence, RI

Dec 2019

CUNY Hunter College

M.A. in pure mathematics

New York, NY

Jan 2013

Bowdoin College

B.A. summa cum laude with highest honors in music, minor in chemistry

Thesis: The First Service of Thomas Morley: an edition, performance, and commentary

Brunswick, ME

May 1998

ACADEMIC AND PROFESSIONAL APPOINTMENTS

Southern Methodist University

RTG postdoctoral fellow / visiting professor

Dallas, TX

Aug 2020 - present

Brown University

Visiting assistant professor / Deans' faculty fellow

Full fellowship support for the fall semester, and appointment as a visiting assistant professor for the spring semester.

Providence, RI

Sep 2019 - May 2020

PUBLICATIONS AND PREPRINTS

- [1] Ross Parker, Yannan Shen, Alejandro Aceves, and John Zweck. Spatiotemporal dynamics in a twisted, circular waveguide array. 2022. [arXiv:2201.11645](#).
- [2] Ross Parker and Andrea K. Barreiro. Bifurcations of a neural network model with symmetry. 2022. [arXiv:2201.02713](#).
- [3] 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](#).
- [4] Ross Parker, Jesús Cuevas-Maraver, P. G. Kevrekidis, and Alejandro Aceves. Floquet solitons in square lattices: Existence, stability and dynamics. *Physical Review E (accepted)*, December 2021. [arXiv:2112.04972](#).
- [5] 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](#).
- [6] 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](#).
- [7] 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](#).

- [8] Ross Parker and Björn Sandstede. Periodic multi-pulses and spectral stability in Hamiltonian PDEs with symmetry. *arXiv e-prints*, October 2020. [arXiv:2010.05728](#).
- [9] 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.
- [10] 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 undergraduate 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

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| Multi-kinks and multi-breathers in the discrete sine-Gordon equation
<i>IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena</i> | Athens, GA
30 Mar-1 Apr, 2022 |
| Standing-wave solutions in twisted multicore fibers
<i>4th Annual Meeting of the SIAM Texas-Louisiana Section</i> | South Padre Island, TX
5-7 Nov, 2021 |
| Periodic multi-pulses in Hamiltonian systems with symmetry
<i>SIAM Conference on Applications of Dynamical Systems 2021</i> | Virtual
23-27 May, 2021 |
| Instability bubbles for periodic multi-pulse solutions to Hamiltonian systems
<i>3rd Annual Meeting of the SIAM Texas-Louisiana Section</i> | Virtual
18 Oct, 2020 |
| Multi-pulse solitary waves in Hamiltonian systems
<i>SMU Math Colloquium</i> | Virtual
24 Sep, 2020 |
| Spectral stability of periodic multi-pulses in the 5th Order KdV equation
<i>SIAM Conference on Applications of Dynamical Systems 2019</i> | Snowbird, UT
19-23 May, 2019 |
| Spectral stability of multi-pulses via the Krein matrix
<i>IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena</i> | Athens, GA
17-19 Apr, 2019 |
| Stability of double pulse solutions to the 5th order KdV equation
<i>Applied Mathematics Colloquium, University of Massachusetts</i> | Amherst, MA
13 Feb, 2018 |
| Stability of double pulse solutions to the 5th order KdV equation
<i>Brown/BU Joint Dynamics and PDE Seminar</i> | Boston, MA
30 Nov, 2017 |

Contributed Talks

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| Solitons and multi-solitons: a spatial dynamics approach
<i>SIAM Math Slam, Brown University</i> | Providence, RI
8 Nov, 2018 |
| Stability of double pulse solutions to the 5th order KdV equation
<i>Applied Mathematics Graduate Seminar, Brown University</i> | Providence, RI
11 Dec, 2017 |

Posters and Multimedia Presentations

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| Spectral stability of multi-pulse solutions to the suspension bridge equation
<i>KuMuNu 2019</i> | Columbia, MO
27-28 Apr, 2019 |
| Spectral stability of multi-pulse solutions to the suspension bridge equation
<i>Dynamics Days 2019</i> | Evanston, IL
4-6 Jan, 2019 |
| Stability of double pulse solutions to the 5th order KdV equation
<i>SIAM Conference on Nonlinear Waves and Coherent Structures 2018</i> | Anaheim, CA
11-14 Jun, 2018 |
| Stability of double pulse solutions to the 5th order KdV equation
<i>KuMuNu 2018</i> | Lawrence, KS
21-22 Apr, 2018 |
| Stability of double pulse solutions to the 5th order KdV equation
<i>Dynamics Days 2018</i> | Denver, CO
4-6 Jan, 2018 |
| Conway's Game of Lights
<i>New York World Maker Faire 2013</i>
Evolving cellular automata displayed on a 10×20 grid of individually addressable RGB LEDs, controlled by Arduino and Raspberry Pi microcontrollers | New York, NY
21-22 Sep, 2013 |

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

4th Annual Meeting of the SIAM Texas-Louisiana Section

Dispersive wave equations with applications in optics and fluids

South Padre Island, TX

Nov 2021

Minisymposium co-organizer

SIAM Conference on Applications of Dynamical Systems 2021

MS6: Coherent structures in dispersive systems

Virtual

May 2021

Co-organizer

Brown/BU/UMass joint dynamical systems and PDE seminar

Providence, RI

2019 - 2020

Minisymposium co-organizer

SIAM Conference on Applications of Dynamical Systems 2019

MS20: Existence and stability of nonlinear waves: theory and numerical computations

Snowbird, UT

May 2019

Co-organizer, weekly graduate student seminar

Division of Applied Mathematics, Brown University

Providence, RI

2018 - 2019

Review session leader, real analysis

Division of Applied Mathematics, Brown University

Providence, RI

2017 - 2020

Vice president

Brown University SIAM student chapter

Providence, RI

2017 - 2019

Small group discussion leader, reflective teaching seminar

Sheridan Center for Teaching and Learning, Brown University

Providence, RI

2017

Department liaison

Sheridan Center for Teaching and Learning, Brown University

Providence, RI

2015 - 2020

Co-chair, Pinewoods Scottish Sessions

Royal Scottish Country Dance Society, Boston Branch

Boston, MA

2018

Co-chair, Pinewoods Scottish Sessions

Royal Scottish Country Dance Society, Boston Branch

Boston, MA

2017

TRAVEL GRANTS

SIAM student travel award

Attendance and minisymposium presentation at SIAM Conference on Applications of Dynamical Systems 2021 (virtual)

23-27 May, 2021

SIAM student travel award

Attendance and minisymposium presentation at SIAM Conference on Applications of Dynamical Systems 2019

19-23 May, 2019

Brown University graduate school travel award

Attendance and minisymposium presentation at IMACS 2019

17-19 April, 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

Phi Beta Kappa*Undergraduate honor society*

Bowdoin College

1998

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

Bowdoin College

1998

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

Bowdoin College

1996

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

Bowdoin College

1995