

# Ross Hamilton Parker

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## EDUCATION

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### 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*

### University of Pennsylvania School of Medicine

*M.D.*

Philadelphia, PA

*May 2009*

### 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

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### 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*

### Columbia University Medical Center

*Internship in internal medicine*

New York, NY

*Jul 2009 - Jul 2010*

## PUBLICATIONS AND PREPRINTS

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- [1] Ross Parker, P. G. Kevrekidis, and Alejandro Aceves. Stationary multi-kinks in the discrete sine-gordon equation. June 2021. [arXiv:2106.07063](#).
- [2] 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.
- [3] 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.
- [4] Efsthios 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](#).
- [5] Ross Parker and Björn Sandstede. Periodic multi-pulses and spectral stability in Hamiltonian PDEs with symmetry. *arXiv e-prints*, October 2020. [arXiv:2010.05728](#).
- [6] 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.

- [7] 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

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### 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

<b>Course design seminar.</b> Sheridan Center for Teaching and Learning, Brown University	2019
Explored integrated course design principles, and developed syllabi, assignments, and activities for two courses.	
<b>Teaching consultant program.</b> Sheridan Center for Teaching and Learning, Brown University	2017
Developed and refined skills in peer observation and feedback, leadership, and discussion facilitation.	
<b>Reflective teaching program.</b> 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

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

### Other

<b>Mathematics tutor.</b> 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.	
<b>Teaching and laboratory assistant.</b> Bowdoin College	1995 - 1998
Introductory chemistry, physics, and music theory.	

## PRESENTATIONS

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### Invited Talks

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

### Contributed Talks

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

### Posters and Multimedia Presentations

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

## JOURNALS REFEREED

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Physica D: Nonlinear Phenomena

## WORKSHOPS

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### **Brown-ICERM-Kobe Summer Simulation School**

17-31 Aug, 2015

Workshop on high performance computing in collaboration with Kobe University, Japan

## OUTREACH AND SERVICE

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### **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

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### **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

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**Alpha Omega Alpha**

*Medical honor society*

University of Pennsylvania

2008

**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