

Jeffrey A. Oregero - Curriculum vitae

Department of Mathematics, University at Buffalo, State University of New York (SUNY)

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Research interests

Nonlinear waves, integrable systems, spectral and inverse spectral theory, singular asymptotics, Riemann-Hilbert problems, numerical analysis

Education

University at Buffalo, SUNY

Department of Mathematics:

2015–present: Ph.D. candidate in Mathematics (Advisor: Gino Biondini)

2015: M.A. in Mathematics

Department of Economics:

2013: M.A. in Economics

Ramapo College of New Jersey

Anisfield School of Business:

2010: B.S. in Finance (*summa cum laude*)

Publications

1. “Semiclassical dynamics and coherent soliton condensates in self-focusing nonlinear media with periodic initial conditions”, G. Biondini and J. Oregero, *Stud. Appl. Math.* **145** (3): 325–356 (2020), DOI [10.1111/sapm.12321](https://doi.org/10.1111/sapm.12321)
2. “On the spectrum of the focusing Zakharov-Shabat operator with periodic potential”, G. Biondini, J. Oregero and A. Tovbis, (in review *J. Spectral Theory*), [arXiv:2010.04263](https://arxiv.org/abs/2010.04263)
3. “On the existence of a two-parameter family of finite-gap potentials of the focusing Zakharov-Shabat operator”, G. Biondini, X.-D. Luo, J. Oregero and A. Tovbis, (in preparation)

Presentations

Invited talks:

1. *Semiclassical Lax spectrum of Zakharov-Shabat systems with periodic potentials*, Eleventh IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, April 17–19, 2019

2. *Zakharov-Shabat systems with periodic potentials*,
Applied Math Days, Rensselaer Polytechnic Institute, April 5–6, 2019
3. *Small-dispersion limits for focusing NLS with periodic boundary conditions*,
SIAM Conference on Nonlinear Waves and Coherent Structures, Orange, California, June 11–14, 2018
4. *Small dispersion limits of the focusing nonlinear Schrödinger equation with periodic boundary conditions*,
Applied Math Days, Rensselaer Polytechnic Institute, April 6–7, 2018

Posters:

5. *Semiclassical Floquet spectrum of periodic Zakharov-Shabat systems*,
Workshop on Dispersive PDEs and Inverse Scattering, Fields Institute, May 21–24, 2019

Awards and honors

- Doctoral Dissertation Fellowship, University at Buffalo, SUNY, \$10,000 (2020)
- Student travel grant, The Fields Institute, \$380 (2019)
- Student travel grant, SIAM, \$650 (2018)
- Ford Foundation Scholarship, \$10,000 (2010)
- Member of *Delta Mu Delta* International Business Administration Honor Society
- Member of *Golden Key* International Honour Society for Academic Excellence
- Ramapo College Dean’s list (2007–2010)

Work experience

Research Foundation, SUNY:

Research assistantship in nonlinear waves	Sept. 2020 – Jan. 2021
Research assistantship in nonlinear waves	Jan. 2018 – Dec. 2018

Pfizer Inc:

Corporate Finance (internship)	May 2009 – Sept. 2009
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Teaching experience

Department of Mathematics, University at Buffalo, SUNY:

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| • Introduction to Differential Equations (virtual) | Instructor, Spring 2021 |
| • Introduction to Differential Equations (virtual) | Instructor, Summer 2020 |
| • Introduction to Differential Equations | Teaching Assistant, Fall 2019 |
| • Introduction to Differential Equations | Instructor, Spring/Summer 2019 |
| • Survey of Calculus and Its Applications I | Instructor, Fall 2018 |
| • Survey of Calculus and Its Applications II | Instructor, Spring/Summer 2018 |
| • Calculus for Business Students | Instructor, Fall 2017 |
| • College Calculus II | Instructor, Summer 2017 |
| • Survey of Partial Differential Equations | Teaching Assistant, Fall 2016/Spring 2017 |

- Introduction to Differential Equations Teaching Assistant, Spring/Summer 2016
- College Calculus I Teaching Assistant, Fall 2015
- College Calculus III Teaching Assistant, Fall 2014/Spring 2015
- Introduction to Linear Algebra Teaching Assistant, Spring 2014
- Calculus for Business Students Teaching Assistant, Fall 2013
- Mathematical Finance Instructor, Spring 2013

Professional service

Journal referee:

- Journal of Mathematical Physics
- European Physical Journal Plus
- Proceedings of the Royal Society A

University at Buffalo Graduate Student Association (GSA)

- Department of Mathematics – Treasurer Sept. 2020 – present

Anisfield School of Business student advisory board

Jan. 2009 – Feb. 2010

Other workshops attended

Field Institute’s Focus Program on Nonlinear Dispersive Partial Differential Equations and Inverse Scattering II:

- (i) Workshop focus areas, May 21–24, 2019
 - Genericity of IST results for non-integrable PDEs
 - Global well-posedness and soliton resolution for large and rough initial data
 - Semiclassical limits for dispersive PDEs
 - Blow-up phenomena for critical dispersive equations

Fields Institute’s Focus Program on Nonlinear Dispersive Partial Differential Equations and Inverse Scattering:

- (i) Summer School on Nonlinear Dispersive PDEs and Inverse Scattering, July 31 – August 4, 2017
- (ii) Workshop on Inverse Scattering and Dispersive PDEs in One Space Dimension, August 8–11, 2017
- (iii) Coxeter Lecture Series, presented by Percy Deift, August 8–10, 2017

Professional skills

- Python
- Matlab
- Mathematica
- \LaTeX
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