

John D. Carter

Curriculum Vitae

June 2022

Mathematics Department
Seattle University
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Positions

- Professor, Mathematics Department, Seattle University, 2012-present
- Associate Professor, Mathematics Department, Seattle University, 2007-2012
- Assistant Professor, Mathematics Department, Seattle University, 2001-2007

Visiting Positions

- Visiting Professor, Department of Mathematics, University of Bergen, Norway, January-June 2017
- Visiting Professor, Department of Mathematics and Computer Science, St. Louis University Madrid, August-December 2016.
- Visiting Professor, Department of Hydraulic and Environmental Engineering, Pontific Catholic University of Chile, August-December 2008

Education

- PhD in Applied Mathematics, University of Colorado Boulder, December 2001
- MS in Applied Mathematics, University of Colorado Boulder, August 1997
- Graduate of Semester in the Southwest, National Outdoor Leadership School, 1994
- BS in Mathematics, University of Puget Sound, May 1994

Teaching Experience

- MATH 1010: College Algebra for Business, F'05
- MATH 1021: Precalculus: Algebra, F'02, F'03, W'04, W'08
- MATH 1130: Elements of Calculus for Business, F'06
- MATH 1230: Calculus for Life Sciences, S'16, F'17, S'18, S'20, F'20
- MATH 1334: Calculus I, W'03, F'07, F'09, S'10, W'11, S'12, W'13, F'13, S'14, F'14, W'15, F'15, W'18, F'19
- MATH 1335: Calculus II, F'01, W'02, F'04, F'10, F'12, S'20, S'22
- MATH 2330: Multivariable Calculus, W'11, F'18
- MATH 2340: Differential Equations, W'02, S'02, F'02, S'03, F'03, S'04, S'05, W'05, F'05, S'06, F'06, W'07, S'07, S'08, W'09, W'10, F'11, F'13, W'14, F'14, S'15, W'16, F'17, W'19, W'20, F'21
- MATH 3440: Nonlinear Systems and Modeling, W'04, W'06, W'08, W'10, W'12
- MATH 3450: Introduction to Numerical Methods, W'05, W'07, W'19, W'21
- MATH 3455: Asymptotics, S'09, S'13, S'19
- MATH 3910: Hamiltonian and Lagrangian Mechanics, W'06
- MATH 3910: Mathematical Models of Wave-Energy Extraction, W'12, W'14
- MATH 3910: Numerical Methods for Differential Equations, S'21
- MATH 4740: Mathematical Models of Near-Shore Phenomena, W'16, W'18, W'20
- (At PUCC) ICH 3800: Nonlinear Water Waves, 2nd '08
- (At SLU Madrid) MATH 1510: Calculus I, F'17

Publications

- **27. H. Potgieter, J.D. Carter, and D.M. Henderson, "Modeling the second harmonic in surface water waves using generalizations of NLS," *Water Waves*, **4**(1):23-47, 2022.
- 26. J.D. Carter, H. Kalisch, C. Kharif, and M. Abid, "The cubic-vortical Whitham equation," *Wave Motion*, **110**:102883, 2022.
- **25. C.R. Zaug and J.D. Carter, "Dissipative models of swell propagation across the Pacific," *Studies in Applied Mathematics*, **147**(4):1519-1537, 2021.
- 24. D.M. Henderson, J.D. Carter, and M.E. Catalano, "On the variation of bi-periodic waves in the transverse direction," *Studies in Applied Mathematics*, **147**(4):1388-1408, 2021.
- 23. J.D. Carter, E. Dinvay, and H. Kalisch, "Fully dispersive Boussinesq models with uneven bathymetry," *Journal of Engineering Mathematics*, **127**:10, 2021.
- 22. J.D. Carter, C.W. Curtis, and H. Kalisch, "Particle trajectories in nonlinear Schrödinger models," *Water Waves*, **2**(1):31-57, 2020.
- 21. C. Kharif, M. Abid, J.D. Carter, and H. Kalisch, "Stability of periodic progressive gravity wave solutions of the Whitham equation in the presence of vorticity," *Physics Letters A*, **384**(2):126060, 2020.
- **20. J.D. Carter and M. Rozman, "Stability of periodic, traveling-wave solutions to the capillary-Whitham equation," *Fluids*, **4**(1):58, 2019.
- **19. J.D. Carter, D.M. Henderson, and I. Butterfield, "Comparisons between frequency downshift models and experimental data," *Physics of Fluids*, **31**:013103, 2019.
- 18. C.W. Curtis, J.D. Carter, and H. Kalisch. "Deep water particle paths in the presence of currents," *Journal of Fluid Mechanics*, **855**:322-350, 2018.
- 17. J.D. Carter, "Bidirectional Whitham equations as models of waves on shallow water," *Wave Motion*, **82**:51-61, 2018.
- 16. D. Eeltink, A. Lemoine, H. Branger, O. Kimmoun, C. Kharif, J.D. Carter, A. Chabchoub, M. Brunetti, and J. Kasparian, "Spectral up- and downshifting of Akhmediev breathers under wind forcing," *Physics of Fluids*, **29**:107103, 2017.
- 15. D. Mitsotakis, D. Dutykh, and J.D. Carter, "On the nonlinear dynamics of the traveling-wave solutions of the Serre system," *Wave Motion*, **70**:166-182, 2017.
- **14. J.D. Carter and A. Govan, "Frequency downshifting in a viscous fluid," *European Journal of Mechanics B, Fluids*, **59**:177-185, 2016.
- **13. J.D. Carter, D. Helliwell, A. Henrich, M. Principe, and J.M. Slaughter, "Improving student success in calculus at Seattle University," *PRIMUS*, **26**(2):105-124, 2016.
- **12. N. Sanford, K. Kodama, J.D. Carter, and H. Kalisch, "Stability of traveling wave solutions to the Whitham equation," *Physics Letters A*, **378**:2100-2107, 2014.
- 11. J.D. Carter, "Stability of plane-wave solutions of a dissipative generalization of the vector nonlinear Schrödinger equation," *Mathematics and Computers in Simulation*, **82**:1038-1046, 2012.
- 10. J.D. Carter and R.E. Cienfuegos, "Kinematics and stability of solitary and cnoidal wave solutions of the Serre equations," *European Journal of Mechanics B: Fluids*, **30**:259-268, 2011.
- 9. D.M. Henderson, H. Segur, and J.D. Carter. "Experimental evidence of stable wave patterns on deep water," *Journal of Fluid Mechanics*, **658**:247-278, 2010.
- **8. J.D. Carter and C.C. Contreras, "Stability of plane-wave solutions of a dissipative generalization of the nonlinear Schrödinger equation," *Physica D*, **237**:3292-3296, 2008.

7. B. Deconinck, F. Kiyak, J.D. Carter, and J.N. Kutz. “SpectrUW, A laboratory for the numerical exploration of spectra of linear operators,” *Mathematics and Computers in Simulation*, **74**:370-378, 2007.
- **6. N.E. Canney and J.D. Carter, “Stability of plane waves on deep water with dissipation,” *Mathematics and Computers in Simulation*, **74**:159-167, 2007.
5. J.D. Carter and B. Deconinck. “Instabilities of one-dimensional trivial-phase solutions of the two-dimensional cubic nonlinear Schrödinger equation,” *Physica D*, **214**:42-54, 2006.
4. R.J. Thelwell, J.D. Carter, and B. Deconinck. “Instabilities of one-dimensional stationary solutions of the cubic nonlinear Schrödinger equation,” *Journal of Physics A*, **39**:73-84, 2006.
3. B. Deconinck, D.E. Pelinovsky, and J.D. Carter. “Transverse instabilities of deep-water solitary waves,” *Proceedings of the Royal Society A*, **462**:2039-2061, 2006.
2. H. Segur, D.M. Henderson, J.D. Carter, J. Hammack, C. Li, D. Pheiff, and K. Socha, “Stabilizing the Benjamin-Feir instability,” *Journal of Fluid Mechanics*, **539**:229-271, 2005.
1. J.D. Carter and H. Segur, “Instabilities in the two-dimensional cubic nonlinear Schrödinger equation,” *Physical Review E*, **68**:045601(R), 2003.

** Papers co-authored by Seattle University undergraduates.

Undergraduate Research Students

27. Benjamin Ries-Roncalli. “Faraday waves over uneven bathymetry.” Summer 2020-present.
26. Sarah Mahl, “The Whitham equation as a model of waves on deep water.” Fall 2020-Spring 2021.
25. Hannah Potgieter, “Modeling the evolution of higher harmonics with generalized NLS equations.” Received the Janet E. Mills Award. Winter 2019-Spring 2020.
24. Christopher Ross, “Time-periodic solutions of the Whitham equation.” Received the Wynne Alexander Guy Award. Spring 2018-Spring 2020.
23. Camille Zaug, “Frequency downshift in ocean waves.” Received the (university-wide) President’s Award, the (college-wide) John Ju Award, and the Mirbagheri-Yandl Award. Spring 2018-Spring 2020.
22. Sal Calatola-Young, “Existence and stability of traveling-wave solutions to bidirectional Whitham equations.” Spring 2019-Winter 2020.
21. Logan Knapp (high-school student), “Periodic solutions of the capillary Whitham equation.” Summer 2018 and Summer 2019.
20. Isabelle Butterfield, “Comparisons between frequency downshift models and experimental data.” Received the (college-wide) Edmund McNulty Award. Spring 2016-Spring 2018.
19. Morgan Rozman, “Stability of solutions to the Whitham equation with surface tension.” Received the Janet E. Mills Award. Fall 2015-Spring 2018.
18. Sean Bassler, “Generalizations of the viscous Dysthe system.” Spring 2016-Spring 2017.
17. Ariana Mendible, “Viscosity in shallow water.” Received the Wynne Alexander Guy Award. Spring 2014-Spring 2015.
16. Alex Govan, “Frequency downshift in a viscous fluid.” Received the Janet E. Mills Award. Spring 2013-Spring 2015.
15. Brandi Fleming, “Deriving the KdV equation.” Received the Wynne Alexander Guy Award. Winter 2013-Spring 2014.

14. Keri Kodama, "Stability of solutions to the Whitham and Fractional KdV equations." Received the Janet E. Mills Award. Winter 2012-Spring 2014.
13. Nathan Sanford, "Stability of solutions to the Whitham equation." Received the Janet E. Mills Award. Winter 2012-Summer 2013.
12. Charles Stoll, "Importance of initial phase in numerical simulations of models of waves on deep water." Spring 2010-Fall 2011.
11. Hao Nguyen, "High-order, three-way operator-splitting methods for partial differential equations." Received the Janet E. Mills Award. Spring 2009-Spring 2010.
10. Natalie Sheils, "Stability of the solitary wave solution of the nonlinear Schrödinger equation with respect to high-frequency perturbations." Received the Mirbagheri-Yandl Award. Summer 2008-Spring 2010.
9. Wilhelmina Chik, "Stability of plane-wave solutions of a dissipative generalization of the vector nonlinear Schrödinger equation." Summer 2007-Spring 2009.
8. Eddie Feeley, "Stability of trivial-phase solutions to a family of nonlinear partial differential equations." Received the Janet E. Mills Award. Summer 2006-Spring 2008.
7. Leland Jefferis, "Stability of nontrivial-phase solutions of the two-dimensional cubic nonlinear Schrödinger equation." Received the Mirbagheri-Yandl Award. Summer 2006-Spring 2008.
6. Crystal Lee, "Mathematical models of the evolution of surface waves on deep water." Received the Mirbagheri-Yandl Award. Summer 2006-Spring 2007.
5. Cynthia Contreras, "Stability of plane-wave solutions of a dissipative generalization of the nonlinear Schrödinger equation." Summer 2005-Summer 2006.
4. Nathan Canney, "Stability of plane-waves on deep water with dissipation." Received the Janet E. Mills Award. Fall 2003-Spring 2006.
3. Mona Usmani, "Stability of Jacobi elliptic function solutions to the one-dimensional cubic nonlinear Schrödinger equation." Fall 2005-Spring 2006.
2. William Whitwell, "Stability of solutions to nonlinear partial differential equations." Summer 2004-Spring 2005.
1. Erin Hunt, "Water waves: Comparisons between mathematical predictions and physical experiments." Fall 2002-Spring 2004.

Presentations

I. Invited Presentations

33. "Modeling tsunamis using mathematics," Pacific Lutheran University Mathematics Seminar, April 2022.
32. "Comparisons between Whitham systems and experiments," Waves in One World Online Seminar, April 2020.
31. "Modeling tsunamis," Undergraduate Mathematical Sciences Seminar, University of Washington, January 2020.
30. "Frequency downshift in the ocean," Mathematics Department Colloquium, Washington State University, April 2019.
29. "Sabbaticals and problem solving," Bannan Scholars' Lunch, Seattle University, November 2017.
28. "An international course on wave-energy extraction," Energy Lab Seminar, University of Bergen, February 2017.

27. "Frequency downshift in a viscous fluid," Fluid Mechanics Seminar, University of Oslo, February 2017.
26. "Frequency downshift in a viscous fluid," Nonlinear Group Seminar, University of Geneva, February 2017.
25. "Stability of plane-wave solutions to generalizations of NLS," Fluid Mechanics Seminar, University of Bergen, February 2017.
24. "Frequency downshift in a viscous fluid," Differential Equations and Numerical Analysis Seminar, Norwegian University of Science and Technology, January 2017.
23. "Using mathematics to model tsunamis," College of Engineering Seminar, St. Louis University Madrid, October 2016.
22. "Modeling tsunamis," Bannan Scholars' Lunch, Seattle University, November 2015.
21. "Nonlocal models of waves on shallow and deep water," Workshop on Nonlocal Equations, Norwegian Technical University, September 2015.
20. "Modeling tsunamis," Undergraduate Mathematical Sciences Seminar, University of Washington, April 2015.
19. "Modeling tsunamis," Mathematics Departmental Colloquium, San Diego State University, April 2015.
18. "Modeling tsunamis," SIAM Student Seminar, Portland State University, April 2015.
17. "Dispersion and dissipation in shallow water," IMA Hot Topics Workshop on the Impact of Waves Along Coastlines, University of Minnesota, October 2014.
16. "The power of applied mathematics," Bannan Scholars' Dinner, Seattle University, May 2012.
15. "Mathematical theory of water waves," Undergraduate Mathematical Sciences Seminar, University of Washington, January 2012.
14. "Mathematical theory of water waves," Mathematics Seminar, University of Puget Sound, October 2010.
13. "Higher-order symplectic numerical methods for partial differential equations," Mathematics Department Seminar, Pontificia Universidad Católica de Chile, November 2008.
12. "Stability of waves on deep water," Seminario del Departamento de Ingeniería Hidráulica y Ambiental, Pontificia Universidad Católica de Chile, August 2008.
11. "How can mathematics help us understand tsunamis, rogue waves and other wave phenomena?" Big Questions in Science Seminar, Seattle University, October 2007.
10. "What it really takes to get tenure," Collaborative Preparing Future Faculty Network Forum, University of Colorado, March 2007.
9. "Mathematics pedagogy," Special Joint Engineering and Mathematics Seminar, Pontificia Universidad Católica de Chile, August 2006.
8. "Communication and mathematics," Special Joint Engineering and Mathematics Seminar, Pontificia Universidad Católica de Chile, August 2006.
7. "Computation and technology," Special Joint Engineering and Mathematics Seminar, Pontificia Universidad Católica de Chile, August 2006.
6. "Comparisons between physical experiments and dissipative mathematical models of surface waves on deep water," Mining Center Seminar, Pontificia Universidad Católica de Chile, August 2006.
5. "Modeling surface waves in the ocean," Applied and Computational Mathematical Sciences Seminar, University of Washington, January 2003.
4. "Instabilities of traveling-wave solutions of the nonlinear Schrödinger equa-

tion,” Mathematics Colloquium, Instituto de Investigaciones en Matemáticas Aplicadas y en Sistemas, Universidad Nacional Autónoma de México, December 2004.

3. “Mathematical models of water waves,” Department of Mathematics Noon Seminar, Pennsylvania State University, March 2003.
2. “Instability of bounded solutions of the 2-D nonlinear Schrödinger equation,” Applied Mathematics Colloquium, University of Washington, September 2002.
1. “Numerics of the 2-D nonlinear Schrödinger equation and its higher-order generalizations,” Nonlinear Waves Seminar, McMasters University, October 2001.

II. Conference and Workshop Presentations

40. “Modeling the Second Harmonic in Surface Waves,” SIAM Pacific Northwest Section Meeting, Washington State University Vancouver, May 2022.
39. “Dissipative models of swell propagation across the Pacific,” IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, March 2022.
38. “Comparisons Between Whitham Systems and Experiments,” SIAM Annual Meeting, Online, July 2021.
37. “Dissipative models of swell propagation across the Pacific,” 4th IMA Conference on Nonlinearity and Coherent Structures, Online, July 2021.
36. “The Whitham equation on an uneven bottom,” SIAM Pacific Northwest Section Meeting, Seattle University, October 2019.
35. “Frequency downshift in the ocean,” ICIAM Conference, Valencia, Spain, July 2019.
34. “Particle paths and transport properties of NLS and its generalizations,” Applied Mathematics, the Next 50 Years Conference, University of Washington, June 2019.
33. “Particle paths and transport properties of NLS and its generalizations,” IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, April 2019.
32. “Comparisons between Experimental Measurements and Predictions from Bidirectional Whitham Equations,” SIAM Annual Meeting, Portland, Oregon, July 2018.
31. “The viscous Dysthe equation,” Conference on Surface Waves in the Ocean, Bergen, Norway, November 2017.
30. “Frequency downshifting in a viscous fluid,” SIAM Pacific Northwest Section Meeting, Oregon State University, October 2017.
29. “Comparisons between experimental measurements and predictions from bidirectional Whitham equations,” Recent Advances in Nonlinear Waves Conference, University of Washington, August 2017.
28. “Frequency downshifting in a viscous fluid,” ICERM Conference on Water Waves, Brown University, April 2017.
27. “Comparisons between experimental measurements and predictions from bidirectional Whitham equations,” IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, March 2017.
26. “Modeling tsunamis,” Norwegian Fulbright Seminar, University of Oslo, February 2017.
25. “Frequency downshifting in a viscous fluid,” Conference on Theoretical and Computational Aspects of Nonlinear Surface Waves, Banff International Research Station, November 2016.

24. "Frequency downshifting in a viscous fluid," SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, August 2016.
24. "Frequency downshifting in a viscous fluid," Joint Mathematics Meetings, Seattle, January 2016.
23. "The Whitham equation," IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, April 2015.
22. "Dispersion and the fractional KdV equation," SIAM Conference on Nonlinear Waves and Coherent Structures, Cambridge University, August 2014.
21. "Dispersion in shallow water," IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, March 2013.
20. "Dispersion in shallow water," Joint Mathematics Meetings, San Diego, January 2013.
19. "Dispersion in shallow water," Conference on Nonlinear Waves in Fluids, Loughborough University, September 2012.
18. "Kinematics and stability of solutions to the Serre equations," AMS Western Sectional Meeting, University of Utah, October 2011.
17. "Kinematics and stability of solutions to the Serre equations," SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, August 2010.
16. "Periodic solutions of the Serre equations," AMS Eastern Sectional Meeting, Pennsylvania State University, October 2009.
15. "Stability and shoaling in the Serre equations," IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, March 2009.
14. "Mathematical models of waves including dissipation," Applied Mathematics Workshop, Pontificia Universidad Católica de Chile, August 2008.
13. "Stability of plane-wave solutions to a dissipative generalization of the NLS equation," SIAM Conference on Nonlinear Waves and Coherent Structures, Università di Roma La Sapienza, July 2008.
12. "Stability of nontrivial-phase solutions to the modified NLS equation," Nonlinear Waves—Theory and Applications Conference, Tsinghua University, June 2008.
11. "Stability of plane-wave solutions to a dissipative generalization of the NLS equation," Nonlinear Waves—Theory and Applications Conference, Tsinghua University, June 2008.
10. "Stability of plane-wave solutions of a dissipative generalization of the NLS equation," IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, April 2007.
9. "Stability of plane waves on deep water with dissipation," SIAM Conference on Nonlinear Waves and Coherent Structures, University of Washington, September 2006.
8. "Stability of Stokes' wave solutions of higher-order generalizations of NLS including dissipation," IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, April 2005.
7. "Instabilities of nontrivial-phase solutions to the cubic nonlinear Schrödinger equation," SIAM Conference on Nonlinear Waves and Coherent Structures, University of Central Florida, October 2004.
6. Poster: "Short-wavelength instabilities of solitary wave solutions of the two-dimensional cubic nonlinear Schrödinger equation," Workshop on Free Surface Water Waves, Field's Institute, June 2004.

5. "Preliminary comparisons of physical experiments of waves on deep water with perturbed solutions of NLS," Workshop on Patterns in Physics, Field's Institute, November 2003.
4. "Instability of bounded solutions of the 2-D nonlinear Schrödinger equation," AMS Eastern Sectional Meeting, North Eastern University, October 2002.
3. "Instability of bounded solutions of the 2-D nonlinear Schrödinger equation," International Symposium on the Mathematical Theory of Networks and Systems, University of Notre Dame, August 2002.
2. "Water waves: Comparisons between mathematical predictions and physical experiments," Fourth Biannual Meeting of the Nonlinear Water Waves Focused Research Group, Pennsylvania State University, April 2002.
1. "Stability of traveling-wave solutions to the nonlinear Schrödinger equation," IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, March 2001.

III. Nonlinear Waves Seminar and Seattle University Presentations

25. "Frequency downshift in a viscous fluid," Nonlinear Waves Seminar, May 2022.
24. "Modeling the Second Harmonic in Surface Waves," Nonlinear Waves Seminar, January 2022.
23. "Swell propagation across the Pacific," Nonlinear Waves Seminar, May 2021.
22. "Whitham-like equations as models of water waves," Nonlinear Waves Seminar, November 2020.
21. "Using mathematics to model tsunamis," Mathematics Department Colloquium, Seattle University, October 2017.
20. "Modeling tsunamis," Mathematics Department Colloquium, Seattle University, November 2015.
19. "Frequency downshifting," Nonlinear Waves Seminar, April 2015.
18. "Dispersion and dissipation in shallow water," Nonlinear Waves Seminar, October 2014.
17. "Modeling tsunamis," Mathematics Department Colloquium, Seattle University, March 2013.
16. "Dispersion in shallow water," Nonlinear Waves Seminar, University of Washington, October 2012.
15. "The Serre equations," Nonlinear Waves Seminar, University of Washington, January 2009.
14. "Stability of plane-wave solutions to a dissipative generalization of the NLS equation," Nonlinear Waves Seminar, University of Washington, June 2008.
13. "Higher-order operator splitting techniques," Nonlinear Waves Seminar, University of Washington, February 2008.
12. "Stability in fiber-optic communication," Mathematics Colloquium, Seattle University, March 2008.
11. Poster: "Waves with dissipation," Celebration of Faculty Scholarship and Research, Seattle University, April 2007.
10. Poster: "Waves with dissipation," Celebration of Faculty Scholarship and Research, Seattle University, April 2006.
9. "Body Image in Media and Entertainment," Academic Salon, Seattle University, February 2006.
8. "Nonlinear waves, stability, and instability," Nonlinear Waves Seminar, University of Washington, January 2006.

7. Poster: “Ocean water waves: A comparison between mathematical predictions and physical experiments,” Celebration of Faculty Scholarship and Research, Seattle University, April 2005.
6. “Nontrivial-phase solutions of the nonlinear Schrödinger equation and their instabilities,” Nonlinear Waves Seminar, University of Washington, October 2004.
5. Poster: “Ocean water waves: A comparison between mathematical predictions and physical experiments,” Celebration of Faculty Scholarship and Research, Seattle University, May 2004.
4. “Higher-order operator splitting as a numerical method for solving ordinary and partial differential equations,” Nonlinear Waves Seminar, Seattle University, June 2004.
3. “Short-wavelength transverse perturbations of elliptic function solutions of NLS,” Nonlinear Waves Group Meeting, Seattle University, October 2003.
2. “Modeling surface waves in the ocean,” School of Science and Engineering Faculty Seminar, Seattle University, November 2002.
1. “Instability of bounded solutions of the 2-D nonlinear Schrödinger equation,” Nonlinear Waves Group Meeting, University of Washington, June 2002.

External Grants and Funding

8. Water Waves – Nonlinearity, Dissipation, and Forcing, July 2017-June 2021. NSF-DMS 1716120. Total: \$116,000.
7. Energy Balance in the Nonlinear Schrödinger Equation, September 2018. Centre International de Rencontres Mathématiques (CIRM), France. Total \$3,000.
6. Fulbright, Core Research Scholar in Norway, January–June 2017. Total: \$12,000.
5. Oral Review Expansion, September 2011–June 2013. Award from Seattle University Academic Affairs. SU portion: \$2,750.
4. Conceptual Oral Reviews, September 2011–August 2012. Subcontract award from CU Boulder. SU portion: \$6,557.
3. Collaborative Research in Nonlinear Water Waves, May 2011–June 2014. NSF-DMS 1107476. Total: \$395,000, SU portion: \$134,204.
2. REU Supplemental Award: Comparisons Between Physical Experiments and Mathematical Predictions, September 2003–August 2007. NSF-DMS 0332345. Total: \$33,666, SU portion: \$33,666.
1. Focused Research Group: Fully Nonlinear, Three-Dimensional Surface Water Waves in Arbitrary Depth, August 2002–August 2007. NSF-DMS 0139771. Total: \$770,000, SU portion: \$50,227.

Grants for Students

2. Clare Boothe Luce Fellowships for students 2014, 2015, 2016.
1. SU Grant for Student Summer Research: 2005, 2006, 2007 (2), 2008, 2009, 2010, 2016, 2019 (2), 2021.

Service and Activities

I. Professional Service

65. Guest editor for *Applied Numerical Mathematics*, June 2022-present.
64. Served on the Temporary Pacific Math Alliance Executive Board Election Committee, Spring 2022.
63. Organizer for a session entitled “Nonlinear Waves,” SIAM Pacific NW Conference, Washington State University, May 2022.
62. Co-organizer for a session entitled “Water Waves,” IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, March 2022.
61. Member of the Scientific Program Committee, IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, March 2022.
60. Serving on the editorial board for *Studies in Applied Math*, Winter 2022-present.
59. Served as the External Reviewer for the Mathematics Department at Montana Western, Winter-Spring 2021.
58. Reviewed an NSF EPSCoR Research proposal, Spring 2021.
57. Serving as Associate Editor for an issue of *Studies in Applied Math*, Winter 2021-Fall 2021.
56. Served on the Fulbright Mathematics Peer Review Committee, Fall 2020.
55. Organized a session entitled “Recent developments in nonlinear waves,” SIAM Conference on Nonlinear Waves and Coherent Structures, Bremen, Germany, July 2020. (Cancelled due to COVID.)
54. Reviewed a NSERC-Mathematical and Statistical Sciences Discovery Grant proposal, Fall 2019.
53. Served on the Egyptian Post-Doctoral Fulbright Mathematics Peer Review Committee, Fall 2019.
52. Co-chaired the SIAM Pacific Northwest Section Meeting, Seattle University, October 2019.
51. Co-organized a session entitled “Recent advances in nonlinear waves,” SIAM Pacific Northwest Section Conference, Seattle University, October 2019.
50. Served on the Fulbright Mathematics Peer Review Committee, Fall 2019.
49. Member of the SIAM Pacific Northwest Section Conference Organizing Committee, Spring-Fall 2019.
48. Member of the APS Division of Fluid Dynamics Annual Conference Organizing Committee, Spring-Fall 2019.
47. Reviewed a grant proposal for the National Science Foundation Division of Ocean Sciences, April 2019.
46. Organized a session entitled “Recent Developments in Mathematical Studies of Water Waves,” IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, April 2019.
45. Member of the Scientific Program Committee, IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, April 2019.
44. Grader for The Mathematics Contest in Modeling Problem C, 2019.
43. Served on the Fulbright Iceland/Norway Regional Review Committee, Fall 2018.
42. Organizer of a session entitled, “Water waves: Comparisons between experiments and predictions” SIAM Conference on Nonlinear Waves and Coherent Structures, June 2018.
41. Served as the external review member for an application for promotion to

- Associate Professor at the Higher Colleges of Technology, UAE, May 2018.
40. Reviewed a grant proposal for the National Science Foundation Division of Ocean Sciences, April 2018.
 39. Grader for The Mathematics Contest in Modeling Problem C, 2018.
 38. Co-organizer for the Conference on Surface Waves in the Ocean, University of Bergen, November 2017.
 37. Scientific Program Committee Member for the Conference on Surface Waves in the Ocean, University of Bergen, November 2017.
 36. Poster Judge, SIAM Pacific Northwest Section Meeting, Oregon State University, October 2017.
 35. Co-organizer for the Recent Advances in Nonlinear Waves Conference, University of Washington, August 2017.
 34. Co-organizer for a session entitled “Nonlocal and full-dispersion model equations in fluid mechanics,” IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, March 2017.
 33. Member of the Scientific Program Committee, IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, March 2017.
 32. Served as an opponent for a doctoral thesis defense in the Mathematics Department at the Norwegian University of Science and Technology, January 2017.
 31. Co-organized a session entitled “Periodic Traveling Waves: Existence, Computation, and Stability,” SIAM Conference on Nonlinear Waves and Coherent Structures, August 2016.
 30. Grader for The Mathematics Contest in Modeling Problem C, 2016.
 29. Founding member of the SIAM Pacific Northwest Section, Fall 2015.
 28. Co-organizer of the joint Seattle University/University of Washington Nonlinear Waves Seminar, Fall 2003-2015.
 27. Associate Editor of SIAM Undergraduate Research Online, January 2016-present.
 26. Co-organized a session entitled “Water Waves,” Joint Mathematics Meetings, January 2016.
 25. Organized a session entitled “Recent Developments in Mathematical Studies of Water Waves,” IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, April 2015.
 24. Member of the Scientific Program Committee, IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, April 2015.
 23. Co-organized a session entitled “Water Waves,” IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, March 2013.
 22. Member of the Scientific Program Committee, IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, March 2013.
 21. Member of Organizing Committee for SIAM Workshop on Nonlinear Waves and Coherent Structures, June 2012.
 20. Member of Scientific Committee, WAVES 2011, Vancouver, July 2011.
 19. Member of the Scientific Program Committee, IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, April 2011.
 18. Co-organized a session entitled “Recent Developments in Mathematical Studies of Water Waves,” IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, April 2011.

17. Co-organized a minisymposium entitled “Mathematical Models of Water Waves,” SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, August 2010.
16. Co-founder/organizer of the joint SU/UW Nonlinear Waves Research Group, Fall 2003-Spring 2010.
15. Served on a Project NExT panel on undergraduate research, Pacific Northwest Section Meeting of the MAA, Seattle University, April 2010.
14. Guest editor for an issue of *Mathematics and Computers in Simulation*, 2010.
13. Organized a session entitled “Mathematical Models of Water Waves,” IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, March 2009.
12. Member of the Scientific Program Committee, IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, March 2009.
11. Organized a session entitled “Patterns in Water Waves,” SIAM Conference on Nonlinear Waves and Coherent Structures, Università di Roma La Sapienza, July 2008.
10. Organized a session entitled “Stability of surface water waves,” IMACS conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, April 2007.
9. Reviewed the engineering mathematics curriculum at the Pontificia Universidad Católica de Chile, August 2006.
8. SIAM Visiting Lecturer, Summer 2006-present.
7. Organized a session entitled “Stability of solutions to nonlinear partial differential equations,” SIAM Conference on Nonlinear Waves and Coherent Structures, University of Washington, September 2006.
6. Organized a session entitled “Recent developments in water waves,” IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, April 2005.
5. Member of Organizing Committee, Workshop on Free Surface Water Waves, Field’s Institute, June 2004.
4. Founding member of SIAM Activity Group on Nonlinear Waves and Coherent Structures, 2004.
3. Hosted Focused Research Group meeting, Seattle University, March 2004.
2. Co-organizer of a session entitled “Nonlinear three-dimensional surface water waves,” IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, April 2003.
1. Referee for many mathematics, oceanography and engineering journals.

II. University Service

18. Served on an Office of Sponsored Research Projects Panel on Funding Panels, Winter 2021.
17. Served as a member of the Faculty Advisory Council for the Office of Sponsored Projects, Winter 2019-present.
16. Served on the Limited Submissions Internal Review Committee for the Office of Sponsored Projects, Summer 2020.
15. Filmed three segments for Religica website about science and education, December 2019.
14. Served on a Learning Assistance Programs Panel on How to Use Office Hours, October 2019.
13. Served on a Center for Faculty Development Panel related to the Fulbright

program, February 2019.

12. Served as a member of the Eva Albers Professorship Selection Committee, Winter 2019.
11. Served as a member of the Faculty Focus Group for Sponsored Projects, Fall 2018.
10. Served on a Center for Faculty Development Panel related to the Fulbright program, January 2018.
9. Center for Excellence in Teaching and Learning Peer Consultant, Spring 2009-2016.
8. Faculty co-advisor for KSUB (SU student-run radio station), Fall 2001-Winter 2016.
7. Served on a Center for Faculty Development Panel related to journal editing, January 2014.
6. Member of Student Recognition Awards Selection Committee, Spring 2011.
5. Faculty advisor for the SU Ultimate Club Team, Summer 2009-Summer 2010.
4. Member of the Center for Excellence in Teaching and Learning Advisory Board, Fall 2004-Spring 2009.
3. Member of the Center for Excellence in Teaching and Learning Associate Director Hiring Committee, Spring 2006.
2. Judge for the SEAC Battle of the Bands, March 2003.
1. Host for Culture and Language Bridge student interviews, March 2003.

III. College Service

32. Serving as the Mathematics Department Representative on the Pre-Health Committee, Spring 2022-present.
31. Chaired the Bannan Selection Committee, Winter 2022.
30. Chaired the "Postdoc Position Creation Committee," Fall 2021-present.
29. Served on an ad-hoc Academic Grievance Panel, Spring 2021.
28. Chaired the Bannan Selection Committee, Winter 2021.
27. Served on the Endowed Chairs Committee, November 2020.
26. Served as a member of an ad-hoc personnel committee for the review of a promotion to professor file, October 2020.
25. Chaired the Bannan Selection Committee, Winter 2020-Spring 2020.
24. Served on the Bannan Selection Committee, Winter 2019-Spring 2019.
23. Served on the Bannan Director's Interview Committee, Winter 2019.
22. Served on the College Technology Committee, Fall 2018-present.
21. Served as a member of an ad-hoc personnel committee for the review of a promotion to professor file, October 2018.
20. Served on the Committee on Departmental Chair Stipends, Fall 2017.
19. Served on the College Awards Committee, Spring 2016.
18. Served on the Scholarship Release Committee, Winter 2016.
17. Served on the Scholarship Release Committee, Winter-Spring 2015.
16. Chaired an ad-hoc personnel committee for the review of a promotion to professor file, November 2014.
15. Served on an ad-hoc personnel committee for the review of a promotion to professor file, November 2014.
14. Co-led a Learning Assistance Programs workshop entitled "How to study for and succeed in your math class," January 2014.
13. College of Science & Engineering Representative for Prestigious Scholarships, Summer 2010-Spring 2014.
12. Co-led a Learning Assistance Programs workshop entitled "How to study for

and succeed in your math class,” October 2013.

11. Chaired the Mathematics Department Session at the SU Celebration of Undergraduate Research, May 2013.
10. Co-led a Learning Assistance Programs workshop entitled “How to study for and succeed in your math class,” January 2013.
9. Co-led a Learning Assistance Programs workshop entitled “How to study for and succeed in your math class,” October 2012.
8. Co-led a Learning Assistance Programs workshop entitled “How to study for and succeed in your math class,” April 2012.
7. Lead a group of students on a trip to Chile to study culture and models of wave-energy extraction, March 2012.
6. Co-led a Learning Assistance Programs workshop entitled “How to study for and succeed in your math class,” January 2012.
5. Member of the College of Science and Engineering Academic Grievance Committee, Fall 2004-present.
4. Lead Learning Center discussions on tutoring mathematics, April 2009.
3. Lead Learning Center discussions on tutoring mathematics, April 2008.
2. Directed two classes for the Odyssey Program for Talented Youth, May 2008.
1. Lead a workshop for mathematics and physics faculty entitled “Using *Mathematica 6* in the classroom,” April 2008.

IV. Select Departmental Service

55. Advised a team that competed in the COMAP Mathematical Contest in Modeling, Winter 2022.
54. Chaired a promotion to full professor review committee for a colleague in the Mathematics Department, Fall 2021.
53. Served on a promotion to full professor review committee for a colleague in the Mathematics Department, Fall 2021.
52. Chaired the renewal of the Mathematica license committee, Winter-Spring 2021.
51. Served on the Instructor Hiring Committee, Winter 2021.
50. Conducted a peer-evaluation for a colleague in the Mathematics Department, Winter 2021.
49. Advised a team that competed in the COMAP Mathematical Contest in Modeling, Winter 2021.
48. Chaired the Mathematics Infrastructure Grant Proposal Committee, Fall 2020.
47. Served on the Precalculus Revitalization Project, Fall 2020-present
46. Organized and led a reading/coding group on methods for solving the Euler equations, Winter 2020.
45. Served on the MATH 4440 Textbook Committee, Fall 2019.
44. Served on the Departmental Technology Committee, Spring 2019-present.
43. Served on the Departmental Assessment Committee, Spring-Fall 2019.
42. Organized a reading group on finite-element methods for differential equations, Spring 2019.
41. Advised a team that competed in the COMAP Mathematical Contest in Modeling, Winter 2019.
40. Organized a reading group on Arnold’s Methods of Classical Mechanics, Fall 2018.
39. Chaired a departmental review of a colleague’s promotion to professor file, Fall 2018.
38. Organized a reading group on programming in Python, Spring 2018.

37. Organized and led a reading group including students and faculty on the python programming language, Spring 2018.
36. Chaired the departmental review of a colleague's promotion and tenure file, Winter 2018.
35. Served on the departmental assessment committee on algorithmic reasoning, Winter 2018.
34. Chaired the departmental technology complete review committee, Fall 2017-Winter 2018.
33. Chaired a tenure and promotion review committee for a colleague in the Mathematics Department, Fall 2017.
32. Served on a third-year review committee for a colleague in the Mathematics Department, Winter 2015.
31. Conducted a peer review of a colleague in the Mathematics Department, Winter 2015.
30. Represented the Mathematics Department at a New Student Open House, April 2015.
29. Co-organized a reading group on asymptotics, Fall 2014-Spring 2015.
28. Served on a tenure review committee for a colleague in the Mathematics Department, Fall 2014.
27. Conducted a peer review of a colleague in the Mathematics Department, Spring 2014.
26. Co-organized a reading group on calculus of variations, Winter-Spring 2014.
25. Conducted a peer review of a colleague in the Mathematics Department, Winter 2013.
24. Chaired MATH 120 Textbook Selection Committee, Fall 2012.
23. Chaired committee to develop rubric for algorithm and computation learning outcome, Fall 2012.
22. Chaired Committee to Revise MATH 135 generic syllabus, Fall 2012.
21. Chaired Committee to Revise MATH 134 generic syllabus, Spring 2012.
20. Organizer of Orals Seminar, Fall 2012-present.
19. Chair of the Differential Equations Position Hiring Committee, Fall 2011-Winter 2012.
18. Academic advisor for math majors in the class of 2014, Fall 2010-present.
17. Conducted a peer review of a colleague in the Mathematics Department, Winter 2011.
16. Member of the Calculus Textbook Selection Committee, 2011.
15. Chair of the Mathematics Department Committee for the Four-Year Review of Faculty, 2011.
14. Member of the Mathematics Department Committee for the Four-Year Review of Faculty, 2010.
13. Member of the MATH 233/234 Reorganization Committee, 2009-2010.
12. Member of the High-Performance Computer Purchase Committee, 2009-2010.
11. Member of the Mathematics Department Committee for the Tenure and Promotion Review of Faculty, 2009.
10. Proctored and graded math placement exams, 2005, 2006, 2007, 2009.
9. Conducted a peer review of a colleague in the Mathematics Department, Winter 2008.
8. Member of the Mathematics Department Committee for the Four-Year Review of Faculty, 2008.
7. Member of the Technology in the Calculus Sequence Committee, 2007-2008.
6. Member of the Departmental Process Review Committee, 2007.

5. Chair of MATH 118 Curriculum Review Committee, Spring 2007.
4. Chair of MATH 120 textbook review/selection committee, Spring 2004.
3. Member of the Engagement With Our NW Location Committee, Fall 2003.
2. Chair of the MATH 120/121/131 Assessment Subcommittee, Fall 2002.
1. Member of the MATH 120 Textbook Committee, 2002.

Select Awards and Fellowships

6. Arline F. Bannan Endowed Chair, September 2020-August 2022.
5. Core Fulbright Research Scholar for Norway, January-June 2017.
4. College of Science and Engineering Outstanding Teacher Award, 2015.
3. College of Science and Engineering Faculty Innovation Award, 2012.
2. Seattle University Summer Faculty Fellowship, 2006, 2010, 2016, 2022.
1. Nominated for the College of Arts and Sciences Outstanding Professor Award, 2002, 2003.