

## DIONYSSIOS MANTZAVINOS

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### RESEARCH INTERESTS

- Partial differential equations arising as models of physical phenomena occurring in domains with a boundary, in one or in higher dimensions; study of existence, uniqueness, and stability of solutions (well-posedness) for the associated initial-boundary value problems
- Long-time asymptotics, inverse scattering transform theory, and traveling wave solutions for completely integrable systems
- Well-posedness and regularity properties of water wave systems

### EDUCATION

- 2008 – 2012 Department of Applied Mathematics and Theoretical Physics & Trinity College, University of Cambridge | *PhD in Mathematics*  
*Thesis:* Initial-Boundary Value Problems for Linear and Integrable Nonlinear Evolution Partial Differential Equations  
*Supervisor:* Athanassios S. Fokas
- 2007 – 2008 Trinity College, University of Cambridge | *Master of Mathematics* (MMath): with Merit
- 2004 – 2007 Trinity College, University of Cambridge | *Bachelor of Arts* in Mathematics

### ACADEMIC EMPLOYMENT

- 2022 – Department of Mathematics, University of Kansas | Associate Professor (with tenure)
- 2017 – 2022 Department of Mathematics, University of Kansas | Assistant Professor
- 2016 – 2017 Department of Mathematics and Statistics, University of Massachusetts Amherst  
Visiting Assistant Professor | *Mentor:* Panayotis G. Kevrekidis
- 2014 – 2016 Department of Mathematics, State University of New York at Buffalo  
Postdoctoral Research Fellow | *Mentor:* Gino Biondini
- 2012 – 2014 Department of Mathematics, University of Notre Dame  
Visiting Assistant Professor | *Mentor:* A. Alexandrou Himonas

### GRANTS, AWARDS & HONORS

- 2023 G. Baley Price Award for Excellence in Teaching, University of Kansas  
(elected by the Mathematics Graduate Students Association)
- 2022 – 2025 NSF-DMS #2206270, PI (\$168,087) "Nonlinear Wave Models in Domains with a Boundary"
- 2022 – 2027 Simons Foundation Collaboration Grant #964451 (\$42,000)  
"Nonlinear Wave Models with Nonzero Boundary Conditions"  
Withdrawn due to funded NSF grant
- 2021 Morrison Foundation Teaching Award, University of Kansas  
(in recognition of exemplary teaching and an ongoing active research program)
- 2020 – 2021 NSF Collaborative Research: Prairie Analysis Seminar (co-PI)

2019	G. Baley Price Award for Excellence in Teaching, University of Kansas (elected by the Mathematics Graduate Students Association)
2018 – 2019	New Faculty General Research Fund, University of Kansas
2013 – 2015	AMS-Simons Travel Grant for Early Career Mathematicians
2008 – 2012	Doctoral Training Grant, Engineering and Physical Research Council, U.K.
2011	Cambridge Philosophical Society Studentship Award
2010	Smith-Knight Essay Prize, University of Cambridge
2004 – 2008	George and Marie Vergottis Scholarship, Cambridge European Trust

### **PUBLICATIONS IN PEER-REVIEWED SCIENTIFIC JOURNALS**

(underlined names denote undergraduate student co-authors)

36. *Long-time asymptotics and the radiation condition with time-periodic boundary conditions for linear evolution equations on the half-line and experiment*  
With Yifeng Mao and Mark Hoefer  
[Studies in Applied Mathematics](#) 152 (2024), 916–973
35. *Local well-posedness of the higher-order nonlinear Schrödinger equation on the half-line: single boundary condition case*  
With Aykut Alkin and Turker Ozsari  
[Studies in Applied Mathematics](#) 152 (2024), 203–248
34. *The Fokas method for the well-posedness of nonlinear dispersive equations in domains with a boundary*  
[Chaos, Fractals and Complexity, Springer Proceedings in Complexity](#) (2023)
33. *The linear Lugiato-Lefever equation with forcing and nonzero periodic or nonperiodic boundary conditions*  
With Joseph Wimmergren  
[Involve: A Journal of Mathematics](#) 16 (2023), 783–808
32. *Extended water wave systems of Boussinesq equations on a finite interval: theory and numerical analysis*  
With Dimitrios Mitsotakis  
[Journal de Mathématiques Pures et Appliquées](#) 169 (2023), 109–137
31. *Growth bound and nonlinear smoothing for the periodic derivative nonlinear Schrödinger equation*  
With Bradley Isom and Atanas Stefanov  
[Mathematische Annalen](#) (2022)
30. *The Robin and Neumann problems for the nonlinear Schrödinger equation on the half-plane*  
With A. Alexandrou Himonas  
[Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences](#) 478 (2022), 20220279
29. *Boundary behavior for the heat equation on the half-line*  
With Andreas Chatziafratis  
[Mathematical Methods in the Applied Sciences](#) 45 (2022), 7364–7393
28. *The nonlinear Schrödinger equation on the half-line with a Robin boundary condition*  
With A. Alexandrou Himonas  
[Analysis and Mathematical Physics](#) 11 (2021), 1–25
27. *Polynomial bound and nonlinear smoothing for the Benjamin-Ono equation on the circle*  
With Bradley Isom, Seungly Oh and Atanas Stefanov  
[Journal of Differential Equations](#) 297 (2021), 25–46

26. *Long-time asymptotics for the focusing nonlinear Schrödinger equation with nonzero boundary conditions in the presence of a discrete spectrum*  
With Gino Biondini and Sitai Li  
[Communications in Mathematical Physics](#) 382 (2021), 1495–1577
25. *The linearized classical Boussinesq system on the half-line*  
With Catherine M. Johnston and Clarence T. Gartman  
[Studies in Applied Mathematics](#) 146 (2021), 635–657
24. *Inverse scattering transform for the focusing nonlinear Schrödinger equation with counterpropagating flows*  
With Gino Biondini and Jonathan Lottes  
[Studies in Applied Mathematics](#) 146 (2021), 371–439
23. *Well-posedness of the nonlinear Schrödinger equation on the half-plane*  
With A. Alexandrou Himonas  
[Nonlinearity](#) 33 (2020), 5567–5609
22. *Initial-boundary value problems for a reaction-diffusion equation*  
With A. Alexandrou Himonas and Fangchi Yan  
[Journal of Mathematical Physics](#) 60 (2019), 081509 (1–19)
21. *The Korteweg-de Vries equation on an interval*  
With A. Alexandrou Himonas and Fangchi Yan  
[Journal of Mathematical Physics](#) 60 (2019), 051507 (1–26)
20. *The nonlinear Schrödinger equation on the half-line with Neumann boundary conditions*  
With A. Alexandrou Himonas and Fangchi Yan  
[Applied Numerical Mathematics](#) 141 (2019), 2–18
19. *Universal behavior of modulationally unstable media*  
With Gino Biondini, Sitai Li and Stefano Trillo  
[SIAM Review](#) 60 (2018), 888–908
18. *Soliton trapping, transmission, and wake in modulationally unstable media*  
With Gino Biondini and Sitai Li  
[Physical Review E](#) 98 (2018), 042211 (1–8)
17. *Long-time asymptotics for the focusing nonlinear Schrödinger equation with nonzero boundary conditions at infinity and asymptotic stage of modulational instability*  
With Gino Biondini  
[Communications on Pure and Applied Mathematics](#) 70 (2017), 2300–2365
16. *Revisiting diffusion: self-similar solutions and the  $t^{-1/2}$  decay in initial and initial-boundary value problems*  
With Panayotis G. Kevrekidis, Matthew O. Williams, Efsthios G. Charalampidis, Minseok Choi and Ioannis G. Kevrekidis  
[Quarterly of Applied Mathematics](#) 75 (2017), 581–598
15. *The nonlinear Schrödinger equation on the half-line*  
With Athanassios S. Fokas and A. Alexandrou Himonas  
[Transactions of the American Mathematical Society](#) 369 (2017), 681–709
14. *Oscillation structure of localized perturbations in modulationally unstable media*  
With Gino Biondini and Sitai Li  
[Physical Review E](#) 94 (2016), 060201(R) (1–6)

13. *The initial value problem for a Novikov system*  
With A. Alexandrou Himonas  
[Journal of Mathematical Physics](#) 57 (2016), 071503 (1–21)
12. *Universal nature of the nonlinear stage of modulational instability*  
With Gino Biondini  
[Physical Review Letters](#) 116 (2016), 043902 (1–5)
11. *The Korteweg-de Vries equation on the half-line*  
With Athanassios S. Fokas and A. Alexandrou Himonas  
[Nonlinearity](#) 29 (2016), 489–527
10. *The Cauchy problem for a 4-parameter family of equations with peakon traveling waves*  
With A. Alexandrou Himonas  
[Nonlinear Analysis: Theory, Methods & Applications](#) 133 (2016), 161–199
9. *An  $ab$ -family of equations with peakon traveling waves*  
With A. Alexandrou Himonas  
[Proceedings of the American Mathematical Society](#) 144 (2016), 3797–3811
8. *Fokas transform method for a brain tumor invasion model with heterogeneous diffusion in 1+1 dimensions*  
With Marianna G. Papadomanolaki, Yiannis G. Saridakis and Anastasios G. Sifalakis  
[Applied Numerical Mathematics](#) 104 (2016), 47–61
7. *The “good” Boussinesq equation on the half-line*  
With A. Alexandrou Himonas  
[Journal of Differential Equations](#) 258 (2015), 3107–3160
6. *The unified transform for the heat equation: II. Non-separable boundary conditions in two dimensions*  
With Athanassios S. Fokas  
[European Journal of Applied Mathematics](#) 26 (2015), 887–916
5. *Hölder continuity for the Fokas-Olver-Rosenau-Qiao equation*  
With A. Alexandrou Himonas  
[Journal of Nonlinear Science](#) 24 (2014), 1105–1124
4. *The Cauchy problem for the Fokas-Olver-Rosenau-Qiao equation*  
With A. Alexandrou Himonas  
[Nonlinear Analysis: Theory, Methods & Applications](#) 95 (2014), 499–529
3. *On the initial-boundary value problem for the linearized Boussinesq equation*  
With A. Alexandrou Himonas  
[Studies in Applied Mathematics](#) 134 (2014), 62–100
2. *The unified method for the heat equation: I. Non-separable boundary conditions and non-local constraints in one dimension*  
With Athanassios S. Fokas  
[European Journal of Applied Mathematics](#) 24 (2013), 857–886
1. *The Kadomtsev-Petviashvili II equation on the half-plane*  
With Athanassios S. Fokas  
[Physica D](#) 240 (2011), 477–511

## WORKS SUBMITTED FOR PUBLICATION

1. *On the proximity between the wave dynamics of the integrable focusing nonlinear Schrödinger equation and its non-integrable generalizations*  
With Dirk Hennig, Nikos Karachalios, Jesus Cuevas-Maraver, and Ioannis Stratis  
[arXiv:2307.16408](https://arxiv.org/abs/2307.16408)

## CONTRIBUTIONS IN BOOKS

1. *Linear initial-boundary value problems via the Fokas method*  
In "The unified transform for boundary value problems: applications and advances"  
edited by A.S. Fokas and B. Pelloni, [Society for Industrial and Applied Mathematics \(SIAM\)](https://www.siam.org/), 2015.

## TALKS: CONFERENCES, WORKSHOPS, SEMINARS & COLLOQUIA

75. *Long-time asymptotics for the integrable focusing NLS equation and proximity of its solutions with those of its non-integrable generalizations*  
Nonlinear Waves Seminar  
Department of Applied Mathematics, University of Colorado Boulder  
November 28, 2023
74. *On the proximity between solutions to the completely integrable focusing nonlinear Schrödinger equation and its non-integrable generalizations*  
8th Annual Meeting of SIAM Central States Section  
Minisymposium on "Recent Developments in Deterministic and Stochastic PDEs: Theoretical and Numerical Analysis"  
October 7, 2023 | University of Nebraska Lincoln
73. *On the proximity between solutions to the completely integrable focusing nonlinear Schrödinger equation and its non-integrable generalizations*  
Differential Equations, Dynamical Systems & Geometric Analysis Seminar  
Department of Mathematics, University of Kansas  
September 20, 2023
72. *On the proximity between solutions to the completely integrable focusing nonlinear Schrödinger equation and its non-integrable generalizations*  
AMS Fall Eastern Sectional Meeting, State University of New York at Buffalo  
Special Session on "Nonlinear Wave Equations and Integrable Systems"  
September 9–10, 2023
71. *The Robin and Neumann problems for the nonlinear Schrödinger equation*  
Mathematics Days in Sofia  
Minisymposium on "Analysis of Nonlinear Waves"  
July 10–14, 2023 | Sofia, Bulgaria
70. *Initial-boundary value problems for the nonlinear Schrödinger equation in one and two dimensions*  
Colloquium  
Department of Mathematics, University of Patras  
May 5, 2023
69. *The Robin and Neumann problems for the nonlinear Schrödinger equation*  
Differential Equations, Dynamical Systems & Geometric Analysis Seminar  
Department of Mathematics, University of Kansas  
November 2, 2022

68. *Initial-boundary value problems for the nonlinear Schrödinger equation in one and two dimensions*  
 Analysis Seminar  
 Department of Mathematics, Bilkent University  
 October 18, 2022
67. *The Robin and Neumann problems for the nonlinear Schrödinger equation*  
 AMS Fall Southeastern Sectional Meeting, University of Tennessee at Chattanooga  
 Special Session on "Deterministic and Stochastic PDEs: Theoretical and Numerical Analyses"  
 October 15-16, 2022
66. *Initial-boundary value problems for the nonlinear Schrödinger equation in one and two dimensions*  
 Program on "Dispersive Hydrodynamics: Mathematics, Simulation and Experiments, with Applications  
 in Nonlinear Waves"  
 Workshop on "Analysis of Dispersive Systems"  
 September 9, 2022 | Isaac Newton Institute, University of Cambridge, U.K.
65. *Fokas's unified transform for the well-posedness of initial-boundary value problems*  
 SIAM Conference on Nonlinear Waves and Coherent Structures  
 Minisymposium on "Advances in Boundary Value Problems and Fokas's Unified Transform Method"  
 August 31, 2022 | Bremen, Germany
64. *The Fokas method for the analysis of dispersive PDEs in domains with a boundary*  
 28th Summer School/Conference on Dynamical Systems and Complexity  
 Special Session Dedicated to the 70th Birthday of Professor Athanassios Fokas  
 July 23, 2022 | Chania, Greece
63. *Initial-boundary value problems for Boussinesq-type systems*  
 Program on "Dispersive Hydrodynamics: Mathematics, Simulation and Experiments, with Applications  
 in Nonlinear Waves"  
 Workshop on "Modulation Theory and Dispersive Shock Waves"  
 July 14, 2022 | Isaac Newton Institute, University of Cambridge, U.K.
62. *Re-discovering Bourgain-type spaces through the study of initial-boundary value problems*  
 PDE, Complex Analysis and Differential Geometry Seminar  
 Department of Mathematics, University of Notre Dame  
 April 26, 2022
61. *The Robin problem for the nonlinear Schrödinger equation on the half-line*  
 12th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena  
 Special Session on "Evolution Equations and Integrable Systems"  
 March 30, 2022 | Athens, Georgia
60. *Analysis of dispersive nonlinear PDEs with nonzero boundary conditions*  
 Colloquium  
 Department of Mathematics, Georgetown University  
 March 4, 2022
59. *Initial-boundary value problems for nonlinear dispersive PDEs in one and two dimensions*  
 Applied Mathematics Seminar  
 Department of Applied Mathematics, University of Washington  
 February 17, 2022
58. *Dispersive PDEs with nonzero boundary conditions*  
 Analysis Seminar

Department of Mathematics, University of Kansas  
December 8, 2021

57. *A new method for the analysis of initial-boundary value problems*  
Invited Speaker  
KUMUNU-ISU Conference on PDE, Dynamical Systems, and Applications  
October 23-24, 2021 | University of Nebraska-Lincoln
56. *Long-time asymptotics and modulational instability in self-focusing media*  
SIAM Annual Meeting  
Minisymposium on "Recent advancements in dispersive hydrodynamics"  
July 19-23, 2021 | Held Online
55. *The nonlinear Schrödinger equation on the half-plane*  
AMS Spring Western Sectional Meeting  
Special Session on "Regularity Theory for Linear and Nonlinear PDEs"  
May 1, 2021 | Held Online
54. *A universal method for evolution partial differential equations in domains with a boundary*  
Colloquium  
Department of Mathematics, University of Kansas  
February 18, 2021 | Held Online
53. *The nonlinear Schrödinger equation on the half-plane*  
PDE, Complex Analysis and Differential Geometry Seminar  
Department of Mathematics, University of Notre Dame  
October 20, 2020 | Held Online
52. *The nonlinear Schrödinger equation on the half-plane*  
3rd Annual Meeting of the SIAM Texas-Louisiana Section  
Minisymposium on "Analytical Aspect of Nonlinear Wave Equations"  
October 18, 2020 | Held Online
51. SIAM Conference on Nonlinear Waves and Coherent Structures  
July 27-30, 2020: Postponed to Summer 2022 due to covid19 pandemic
50. 13th AIMS Conference on Dynamical Systems, Differential Equations and Applications  
June 5-9, 2020: Postponed to Summer 2022 due to covid19 pandemic
49. *The nonlinear Schrödinger equation on the half-plane*  
Analysis Seminar  
Department of Mathematics, University of Kansas  
May 20, 2020 | Held Online
48. Applied Mathematics Seminar, University of Colorado Boulder  
April 7, 2020: Cancelled due to covid19 pandemic
47. *Dispersive PDEs with nonzero boundary conditions*  
Colloquium  
Mathematics Department, California Polytechnic State University San Luis Obispo  
February 28, 2020
46. *Initial-boundary value problems for nonlinear dispersive PDEs in one and higher dimensions*  
SIAM Conference on Analysis of Partial Differential Equations  
Minisymposium on "Analysis of Evolution Partial Differential Equations and Applications"  
December 11-14, 2019 | La Quinta, California

45. *Universal behavior of modulationally unstable media*  
SIAM Conference on Analysis of Partial Differential Equations  
Minisymposium on "Applicable Analysis and Control Theory for Fluid and Fluid-Structure PDE"  
December 11–14, 2019 | La Quinta, California
44. *Well-posedness of initial-boundary value problems for nonlinear evolution equations*  
SIAM Central States Section Meeting, Iowa State University  
Minisymposium on "Analysis of Coupled PDE Dynamics"  
October 19–20, 2019
43. *Long-time asymptotics for the focusing nonlinear Schrödinger equation and the nonlinear stage of modulational instability*  
Applied Mathematics, Modeling and Computational Science 2019 International Conference  
Special Session on "Numerical and Analytical Techniques with Applications in Wave Propagation"  
August 22, 2019 | Waterloo, Ontario, Canada
42. *Dispersive equations in domains with a boundary*  
Analysis Seminar  
Department of Mathematics, University of Kansas  
April 24, 2019
41. *Analysis of nonlinear evolution equations in domains with a boundary*  
11th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena  
Special Session on "Evolution Equations and Integrable Systems"  
April 17–19, 2019 | Athens, Georgia
40. *Long-time asymptotics for the focusing nonlinear Schrödinger equation: non-vanishing initial data with non-trivial discrete spectrum*  
AMS Spring Central and Western Joint Sectional Meeting, University of Hawaii at Manoa  
Special Session on "Nonlinear Wave Equations and Applications"  
March 22–24, 2019
39. *Initial-boundary value problems for a reaction-diffusion equation*  
2019 Joint Mathematics Meetings (JMM)  
Special Session on "Problems in Partial Differential Equations"  
January 16–19, 2019 | Baltimore, Maryland
38. *Initial-boundary value problems for a reaction-diffusion equation*  
Conference on Mathematics of Wave Phenomena  
Minisymposium on "Stability of Solitary Waves"  
July 23–27, 2018 | Karlsruhe, Germany
37. *Interaction between solitons and radiation in modulationally unstable media*  
SIAM Conference on Nonlinear Waves and Coherent Structures  
Minisymposium on "Inverse Scattering and Dispersive Hydrodynamics"  
June 11–14, 2018 | Orange County, California
36. *Long-time asymptotics for the focusing nonlinear Schrödinger equation and the nonlinear stage of modulational instability*  
AMS Spring Central Sectional Meeting, Ohio State University  
Special Session on "Nonlinear Evolution Equations"  
March 17–18, 2018



35. *Long-time asymptotics for the focusing nonlinear Schrödinger equation and the nonlinear stage of modulational instability*  
Colorado Nonlinear Days, University of Colorado Colorado Springs  
November 12, 2017
34. *Linear diffusion under the presence of a boundary*  
Computational and Applied Mathematics Seminar  
Department of Mathematics, University of Kansas  
October 11, 2017
33. *Asymptotic stage of modulational instability under the presence of a discrete spectrum*  
AMS Fall Eastern Sectional Meeting, State University of New York at Buffalo  
Special Session on "Nonlinear Wave Equations, Inverse Scattering and Applications"  
September 16–17, 2017
32. *Well-posedness for a higher-order family of Camassa-Holm type equations*  
Analysis Seminar  
Department of Mathematics, University of Kansas  
September 6, 2017
31. *On rigorous aspects of the unified transform method: linear and nonlinear evolution equations on the half-line*  
10th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena  
Special Session on "Evolution Equations and Integrable Systems"  
March 29–April 1, 2017 | Athens, Georgia
30. *On the analysis of integrable evolution equations*  
2017 Joint Mathematics Meetings (JMM)  
Special Session on "Problems in Partial Differential Equations"  
January 4–7, 2017 | Atlanta, Georgia
29. *On the Cauchy problem for a higher-order family of Camassa-Holm type equations*  
Analysis Seminar  
Department of Mathematics, University of Massachusetts Amherst  
November 16, 2016
28. *Long-time asymptotics for the focusing nonlinear Schrödinger equation with nonzero boundary conditions at infinity*  
AMS Fall Western Sectional Meeting, University of Denver  
Special Session on "Nonlinear Wave Equations and Applications"  
October 8–9, 2016
27. *The Korteweg-de Vries equation on the half-line*  
11th AIMS Conference on Dynamical Systems, Differential Equations and Applications  
Special Session on "Evolution Equations and Integrable Systems"  
July 1–5, 2016 | Orlando, Florida
26. *Initial value and initial-boundary value problems for nonlinear evolution equations*  
Colloquium  
Department of Mathematical Sciences, Rensselaer Polytechnic Institute  
April 11, 2016
25. *A new approach to initial-boundary value problems for nonlinear dispersive evolution PDEs*  
6th Ohio River Analysis Meeting, University of Kentucky  
March 12–13, 2016

24. *Initial value and initial-boundary value problems for nonlinear evolution equations*  
Colloquium  
Department of Mathematics, University of Colorado Colorado Springs  
March 3, 2016
23. *Initial value and initial-boundary value problems for nonlinear evolution equations*  
Colloquium  
Department of Mathematics, University of Kansas  
February 16, 2016
22. *Initial value and initial-boundary value problems for nonlinear evolution equations*  
Colloquium  
Department of Mathematics, Ohio University  
February 10, 2016
21. *Initial value and initial-boundary value problems for nonlinear evolution equations*  
Colloquium  
Department of Mathematics, DePaul University  
January 22, 2016
20. *Initial value and initial-boundary value problems for nonlinear evolution equations*  
Colloquium  
Department of Mathematics, University of Cincinnati  
January 13, 2016
19. *Long-time asymptotics for the focusing nonlinear Schrödinger equation with constant boundary conditions at infinity*  
Workshop on "Dispersive Hydrodynamics: Mathematics of Dispersive Shock Waves and Applications"  
May 17–22, 2015 | Banff International Research Station, Alberta, Canada
18. *The "good" Boussinesq equation on the half-line*  
9th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena  
Special Session on "Nonlinear Evolution Equations and Integrable Systems"  
April 1–4, 2015 | Athens, Georgia
17. *The "good" Boussinesq equation on the half-line*  
PDE, Complex Analysis and Differential Geometry Seminar  
Department of Mathematics, University of Notre Dame  
January 15, 2015
16. *Initial value and initial-boundary value problems for water wave equations*  
Analysis Seminar  
Department of Mathematics, University of Rochester  
November 13, 2014
15. *On rigorous aspects of the unified method: the nonlinear Schrödinger equation on the half-line*  
SIAM Conference on Nonlinear Waves and Coherent Structures  
Minisymposium on "Boundary-value Problems for Linear and Nonlinear Integrable Problems"  
August 11–14, 2014 | Churchill College, University of Cambridge, U.K.
14. *The Boussinesq equation on the half-line*  
10th AIMS Conference on Dynamical Systems, Differential Equations and Applications  
Special Session on "Evolution Equations and Integrable Systems"  
July 7–11, 2014 | Madrid, Spain

13. *On the Cauchy problem for a Camassa-Holm type equation with cubic nonlinearity*  
10th AIMS Conference on Dynamical Systems, Differential Equations and Applications  
Special Session on "Boundary Value Problems for Linear and Nonlinear Integrable Equations"  
July 7–11, 2014 | Madrid, Spain
12. *The Kadomtsev-Petviashvili II equation on the half-plane*  
Workshop on "Scattering and Inverse Scattering in Multidimensions", University of Kentucky  
May 16–23, 2014
11. *The Boussinesq equation on the half-line*  
Mini conference on "Topics in Euler's Equation for Incompressible Fluids", University of Notre Dame  
May 14–16, 2014
10. *A new approach to the well-posedness of initial-boundary value problems*  
Applied Mathematics Seminar  
Department of Mathematics, State University of New York at Buffalo  
May 1, 2014
9. *The Boussinesq equation on the half-line*  
PDE, Complex Analysis and Differential Geometry Seminar  
Department of Mathematics, University of Notre Dame  
October 1, 2013
8. *The initial value problem for a Camassa-Holm type equation with cubic nonlinearity*  
Applied Mathematics Seminar  
Department of Applied Mathematics, University of Washington  
April 23, 2013
7. *The Cauchy problem for the Fokas-Olver-Rosenau-Qiao equation*  
8th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena  
Special Session on "Nonlinear Evolution Equations and Integrable Systems"  
March 25–28, 2013 | Athens, Georgia
6. *On the "good" Boussinesq equation on the half-line*  
2013 Joint Mathematics Meetings (JMM)  
Special Session on "Nonlinear Evolution Equations and Integrable Systems"  
January 9–12, 2013 | San Diego, California
5. *Boundary value problems for evolution PDEs: a unified approach*  
70th Midwest PDE Seminar, University of Memphis  
November 3–4, 2012
4. *Initial-boundary value problems for linear and integrable nonlinear evolution PDEs*  
Workshop on "Boundary Value Problems for Linear Elliptic and Integrable PDEs: Theory and Computation"  
May 28–June 1, 2012 | International Centre for Mathematical Sciences, Edinburgh, U.K.
3. *Boundary value problems for linear and nonlinear PDEs: a new approach*  
Colloquium  
Department of Mathematics, Baylor University  
February 13, 2012
2. *Applications of complex analysis to boundary value problems*  
European Science Foundation Conference on "Completely Integrable Systems and Applications"  
July 3–8, 2011 | Erwin Schrödinger Institute, Vienna, Austria

1. *A unified approach to boundary value problems*  
9th International Workshop on "Mathematical Methods in Scattering Theory and Biomedical Engineering"  
October 9–11, 2009 | Patras, Greece

#### **CONFERENCE ORGANIZATION**

19. Differential Equations, Dynamical Systems & Geometric Analysis Seminar  
September 2022 – present | University of Kansas
18. 20th Prairie Analysis Seminar  
With Diego Maldonado, Virginia Naibo and Shuanglin Shao  
Fall 2024 | University of Kansas
17. SIAM Conference on Nonlinear Waves and Coherent Structures  
Minisymposium on "Recent Developments in Dispersive Partial Differential Equations"  
With Jeffrey Oreggergo  
June 24-27, 2024 | Baltimore, Maryland
16. 8th KUMUNU-ISU Conference on PDE, Dynamical Systems and Applications  
With Mat Johnson  
April 6-7, 2024 | University of Kansas
15. 19th Prairie Analysis Seminar  
With Diego Maldonado, Virginia Naibo and Shuanglin Shao  
November 3-4, 2023 | Kansas State University
14. 18th Prairie Analysis Seminar  
With Diego Maldonado, Virginia Naibo and Shuanglin Shao  
October 28-29, 2022 | University of Kansas
13. "Dispersive Hydrodynamics: Mathematics, Simulation and Experiments, with Applications in Nonlinear Waves" | Workshop on "Analysis of Dispersive Systems"  
With Gino Biondini, Mark Hoefer and Barbara Prinari  
September 5–9, 2022 | Isaac Newton Institute, University of Cambridge, U.K.
12. SIAM Conference on Nonlinear Waves and Coherent Structures  
Minisymposium on "Advances in Boundary Value Problems and Fokas's Unified Transform Method"  
With Bernard Deconinck, Matthew Farkas and A. Alexandrou Himonas  
August 30–September 2, 2022 | Bremen, Germany
11. 12th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena  
Special Session on "Evolution Equations and Integrable Systems"  
With A. Alexandrou Himonas, Curtis Holliman and Fangchi Yan  
March 30–April 2, 2022 | Athens, Georgia
10. 17th Prairie Analysis Seminar  
With Diego Maldonado, Virginia Naibo and Shuanglin Shao  
November 5–6, 2021 | Kansas State University
9. SIAM Conference on Applications of Dynamical Systems  
Minisymposium on "Analysis of Nonlinear Wave Models"  
With Yannan Shen  
May 23–27, 2021

8. SIAM Conference on Analysis of Partial Differential Equations  
Minisymposium on "Analysis of Evolution Partial Differential Equations and Applications"  
With Satbir Malhi  
December 11–14, 2019 | La Quinta, California
7. 11th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena  
Special Session on "Evolution Equations and Integrable Systems"  
With A. Alexandrou Himonas and Curtis Holliman  
April 17–19, 2019 | Athens, Georgia
6. 10th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena  
Special Session on "Evolution Equations and Integrable Systems"  
With A. Alexandrou Himonas and Curtis Holliman  
March 29–April 1, 2017 | Athens, Georgia
5. 2017 Joint Mathematics Meetings (JMM)  
Special Session on "Problems in Partial Differential Equations"  
With A. Alexandrou Himonas  
January 4–7, 2017 | Atlanta, Georgia
4. 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications  
Special Session on "Evolution Equations and Integrable Systems"  
With A. Alexandrou Himonas  
July 1–5, 2016 | Orlando, Florida
3. 9th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena  
Special Session on "Nonlinear Evolution Equations and Integrable Systems"  
With A. Alexandrou Himonas  
April 1–4, 2015 | Athens, Georgia
2. 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications  
Special Session on "Evolution Equations and Integrable Systems"  
With A. Alexandrou Himonas  
July 7–11, 2014 | Madrid, Spain
1. Mini conference on "Topics in Euler's Equation for Incompressible Fluids"  
Main speaker: Vladimir Sverak  
With A. Alexandrou Himonas  
May 14–16, 2014 | University of Notre Dame

### **COURSES TAUGHT**

University of Kansas

2017 – present

- Spring 2024: *Intermediate Analysis*
- Fall 2023: *Partial Differential Equations* (graduate)
- Spring 2023: *Topics in Dynamical Systems* (graduate)
- Fall 2022: *Calculus II*
- Spring 2022: *Mathematical Analysis II* (graduate)
- Fall 2021: *Applied Differential Equations* | *Applied Partial Differential Equations*
- Spring 2021: *Applied Partial Differential Equations*
- Fall 2020: *Mathematical Analysis I* (graduate) | *Complex Variables and Applications*

- Spring 2020: *Intermediate Analysis | Applied Differential Equations*
- Fall 2019: *Partial Differential Equations* (graduate)
- Spring 2019: *Topics in Dynamical Systems* (graduate)
- Fall 2018: *Mathematical Analysis I* (graduate)
- Spring 2018: *Elementary Differential Equations*
- Fall 2017: *Applied Differential Equations*

University of Massachusetts Amherst 2016 – 2017

- Spring 2017: *Multivariate Calculus* (2 sections)
- Fall 2016: *Calculus I for Mathematics, Engineering and Science Majors* (2 sections)

State University of New York at Buffalo 2014 – 2016

- Spring 2016: *Calculus II for Mathematics, Engineering and Science Majors*
- Fall 2015: *Calculus II for Mathematics, Engineering and Science Majors*
- Spring 2015: *Introduction to Differential Equations*
- Fall 2014: *Calculus II for Mathematics, Engineering and Science Majors*

University of Notre Dame 2012 – 2014

- Spring 2014: *Calculus II for Engineers | Differential Equations*
- Fall 2013: *Calculus I for Engineers | Basic Partial Differential Equations* (graduate)
- Spring 2013: *Calculus II for Engineers | Calculus II for Business*
- Fall 2012: *Calculus I for Engineers | Calculus III for Engineers*

University of Cambridge (supervisions/tutorial sessions) 2008 – 2012

- Spring 2012: *Integrable Systems*
- Fall 2011: *Vectors and Matrices*
- Spring 2011: *Integrable Systems | Complex Analysis | Analytical Methods for Boundary Value Problems and Medical Imaging* (graduate)
- Fall 2010: *Vectors and Matrices*
- Spring 2010: *Integrable Systems*
- Fall 2009: *Vectors and Matrices | Differential Equations*
- Spring 2009: *Integrable Systems | Complex Analysis*
- Fall 2008: *Vectors and Matrices | Differential Equations*

### **TEACHING & MENTORING OUTSIDE THE CLASSROOM**

University of Kansas 2017 – present

- Fall 2023 – present: *Advisor* of MA student Magzhan Biyar
- Fall 2022 – present: *Advisor* of PhD student Chris Mayo  
*Advisor* of MA student Logan Honeycutt
- Spring 2023 – Fall 2023: *Directed Reading* on “Solution of linear PDEs via the unified transform” with undergraduate student Jared Bramble
- Fall 2022 – Spring 2023: *Advisor* of MA student Jaekang Lee

- Fall 2017 – Spring 2021: *Co-advisor* (jointly with Atanas Stefanov) of PhD student Bradley S. Isom
- Fall 2021 – Spring 2022: Departmental Honors Project Advisor of undergraduate student Logan Honeycutt
- Fall 2018 – Spring 2021: Departmental Honors Project Advisor of undergraduate student Catherine Johnston
- Fall 2019 – Spring 2020: *Advisor* of MA student John Thomas Stoller
- Spring 2022: *Directed Reading* on "College basketball performance metrics" with undergraduate students Logan Longacre and Benjamin Glass
- Fall 2021 – Spring 2022: *Directed Reading* on "Complex analysis and applications to PDEs" with undergraduate student Logan Honeycutt (supported by an undergraduate research award from the Department of Mathematics)  
*Directed Reading* on "PDEs of fluid dynamics" with undergraduate student Coby Johnson
- Spring 2021: *Undergraduate Research* on "Lugiato-Lefever Equation on the Half-line" with undergraduate student Joseph Wimmergren (supported by an undergraduate research award from the Department of Mathematics)
- Spring 2020: *Directed Reading* (jointly with Mathew Johnson) on "Modeling of Blood Flow" with undergraduate student Jordan Bramble  
*Directed Readings* on "Boundary Value Problems for the Serre System" with undergraduate students Thomas Gartman and Catherine Johnston (Catherine Johnston supported by an undergraduate research award from the Department of Mathematics)
- Summer 2019: *Directed Readings* on "Initial-Boundary Value Problems for Linear Evolution PDEs" with undergraduate student Thomas Gartman
- Spring 2019: *Directed Reading* on "Initial-Boundary Value Problems for Linear Evolution PDEs" with undergraduate students Thomas Gartman and Catherine Johnston (both students together with Andre Kurait were awarded first prize in the Spring 2019 Engineering Research Showcase at KU for their presentation on "Demonstrating the Unified Transform Method to Solve Half-Line Linear PDEs")
- Fall 2018: *Directed Reading* on "Initial-Boundary Value Problems for Linear Evolution PDEs" with undergraduate students Thomas Gartman and Andre Kurait
- Summer 2018: *Directed Reading* on "Water Wave Equations" with undergraduate student Thomas Gartman

University of Massachusetts Amherst 2016 – 2017

- Spring 2017: *Independent Study* on "Soliton solutions of the Korteweg-de Vries equation" with undergraduate student Mark Yankai Xiang

State University of New York at Buffalo 2014 – 2016

- Fall 2015: *Directed Reading* on "Water Wave Equations" with undergraduate student Jingpeng Xu

University of Notre Dame 2012 – 2014

- Summer 2013: *Directed Reading* on "Traveling Wave Solutions for Nonlinear Dispersive Equations" with undergraduate student Stephen Hicks

## **OUTREACH & OTHER ACTIVITIES**

- \* Co-organizer of the Prairie Analysis Seminar (since Fall 2020)
- \* Co-organizer of the KUMUNU-ISU conference (since Spring 2022)
- \* Co-Coordinator of the Kansas MAA Competitions (since June 2020)
- \* Math Kangaroo International Competition: Manager of the University of Kansas center (since Fall 2018)
- \* Co-organizer of the KU Mathematics Competition (since Fall 2019)
- \* University of Kansas Putnam Competition Team: Coaching coordinator (Fall 2018, Fall 2022) | Held coaching sessions in Analysis (Fall 2017, Fall 2018, Fall 2022) and Number Theory (Fall 2018, Fall 2022)
- \* Kansas Collegiate Math Competition: Coached the University of Kansas team (Spring 2018 & Spring 2019)
- \* Center for Teaching Excellence, University of Kansas: Ambassador for the Department of Mathematics (since Spring 2018)
- \* Member of the Graduate Studies Committee, Department of Mathematics, University of Kansas (since Fall 2019)
- \* Participated in Jayhawk Mathematics Sneak Peek Event for the recruitment of promising potential applicants from historically underrepresented groups to our graduate program (since Fall 2017)
- \* Committee member for PhD students Xiaohong Cai (Psychology), Kyle Claassen, Brett Ehrman, Samuel Fromm (external), Harrison Gaebler, Jonathan Lottes (external), Satbir Malhi, Wesley Perkins, Iurii Posukhovskiy, Abba Ramadan, Connor Smith, Majed Sofiani, Xiang Xu, Ray Zhang; MA students Skylar Allen, Claire Bodemann, Paul Goodwin, Mikal Nelson; undergraduate students Trevor Scheopner, Asher Supernaw, Jonah Berggren
- \* Referee for multiple scientific journals, including Communications in Mathematical Physics, Nonlinearity, Journal of Differential Equations, SIAM Journal of Mathematical Analysis, Journal of Mathematical Analysis and Applications, Nonlinear Analysis Series B: Real World Applications, Journal of Mathematical Physics, Discrete and Continuous Dynamical Systems Series B, Studies in Applied Mathematics, Journal of Nonlinear Science, Journal of Physics A, Physica D, Applied Mathematics Letters, Annales de l'Institut Henri Poincaré Analyse non linéaire, Communications on Pure and Applied Analysis, Journal of Evolution Equations, Journal of Dynamics and Differential Equations, Nonlinear Differential Equations and Applications, Proceedings of the London Mathematical Society

## **PROFESSIONAL MEMBERSHIPS**

- \* American Mathematical Society (AMS)
- \* Society for Industrial and Applied Mathematics (SIAM)
- \* Math Alliance: The National Alliance for Doctoral Studies in the Mathematical Sciences
- \* Cambridge Philosophical Society
- \* Trinity College Mathematical Society