Efstathios G. Charalampidis

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	 ☎ (619) 594-7247 □ (413) 801-3991 ∞ echaralampidis@sdsu.edu Webpage: https://www.egcharalampidis.com/ Google scholar: https://scholar.google.com/citations?user=pGrs2YIAAAAJ&hl=en ResearchGate: https://www.researchgate.net/profile/Efstathios_Charalampidis ORCID iD: ⓑ https://orcid.org/0000-0002-5417-4431
Research Interests	Computational and Applied Mathematics, Numerical Analysis, Ordinary and Partial Differential Equations, Mathematical Physics, Gravitation, Nonlinear Waves
Education	• Aristotle University of Thessaloniki, Department of Mathematical, Physical and Computa- tional Sciences, Thessaloniki, Greece
	 Ph.D. in Applied Mathematics, November 2009 - October 2013 Thesis title: "Skyrmions, Topology and Geometry" Advisor: Professor Theodora I. Ioannidou
	 Aristotle University of Thessaloniki, Physics Department, Thessaloniki, Greece M.Sc. in Computational Physics, September 2007 - October 2009 B.Sc. in Physics, September 2002 - September 2007 * Major: Theoretical Physics
Academic Employment &	 San Diego State University, Department of Mathematics and Statistics > Assistant Professor, August 2024 - present
POSITIONS	 California Polytechnic State University San Luis Obispo, Mathematics Department ▷ Assistant Professor, September 2019 - August 2024
	 University of Rouen Normandy, Laboratoire de Mathématiques Raphaël Salem CNRS Visiting Professor, June 2023 - September 2023
	 University of Massachusetts Amherst, Department of Mathematics and Statistics ▷ Lecturer and Chief Undergraduate Advisor, September 2018 - August 2019 ▷ Visiting Assistant Professor, September 2015 - August 2018 ▷ Postdoctoral Research Associate, November 2013 - June 2015
Grants & Fellowships	 Department of Defense ▷ Quantum simulation of multi-component droplets: Many-body phases and correlated non-equilibrium dynamics, amount: \$679, 834 (submitted, PI)
	 Department of Energy ▷ DE-SC0025726 (co-PI): "Building Capacity for Novel High-Temperature Plasma Research at San Diego State University", amount: \$644,000, July 1, 2025 - June 31, 2028
	 Centre National de la Recherche Scientifique (CNRS), France ▷ Visiting Professorship at Laboratoire de Mathématiques Raphaël Salem, University of Rouen Normandy, amount: 9,000 Euros (≈ \$9,679.68), June 15 - September 14, 2023

- National Science Foundation
 - ▷ DMS-2204782 (PI): "Collaborative Research: Collapse, Rogue Waves and their Applications: From Theory to Computation and Beyond", amount: \$142,798, September 1, 2022 - August 31, 2025
- California Polytechnic State University, San Luis Obispo
 - ▷ Research, Scholarly and Creative Activities (RSCA) grant (PI), amount: \$17,976, July 2020 March 2022
- US AFOSR (FA9550-12-1-0332) grant
 - \triangleright Postdoctoral fellowship, November 2014 June 2015
- European Commission, Community Research: "FP7, Marie Curie Actions, International Research Staff Exchange Scheme (IRSES-605096)" grant
 - \triangleright Postdoctoral fellowship, November 2013 November 2014
- DFG Research Training Group 1620 "Models of Gravity", Institüt für Physik, Universität Oldenburg, Germany
 - \triangleright Research fellowship, August 4 October 5, 2013
- Department of Mathematical, Physical and Computational Sciences, Aristotle University of Thessaloniki, Greece
 - ▷ Research studentship, September 2010 June 2011
 - \triangleright Research studentship, March 2010 July 2010

Honors & Awards

- California Polytechnic State University, San Luis Obispo
 ▷ Nominated twice for the "Distinguished Scholarship Award", 2022 & 2023
 - Institute of Physics (IOP), Journal of Optics
 "Emerging Leaders in Optics 2021"
 - University of Massachusetts Amherst
 ▷ Finalist for the "Distinguished Teaching Award", November 2017
 - Aristotle University of Thessaloniki, Greece
 ▷ "Scholarship of Excellence" awarded by University's Research Committee, 2012

Teaching Experience

- San Diego State University¹
 - MATH 252 Calculus III (F24, S25)
 MATH 542 Introduction to Computational Ordinary Differential Equations (F25)
 - California Polytechnic State University San Luis Obispo¹
 - ▷ MATH 143 Calculus III (F19, W20, S20, F20, W22, F22)
 - ▷ MATH 241 Calculus IV (F21, S22)
 - ▷ MATH 244 Linear Analysis I (W23, W24, S24)
 - ▷ MATH 344 Linear Analysis II (S21, F22, F23)
 - ▷ MATH 451 Numerical Analysis I (W20, W21, W22, W23)
 - ▷ MATH 452 Numerical Analysis II (S21, S23)
 - ▷ MATH 453 Numerical Optimization (S20, S22)
 - ▷ MATH 501 Analytic Methods in Applied Mathematics (F23)
 - $\triangleright\,$ MATH 502 Numerical Methods in Applied Mathematics (W24)
 - University of Massachusetts Amherst¹
 - ▷ MATH 552 Applications of Scientific Computing (S18, S19)
 - ▷ MATH 551 Introduction to Scientific Computing (S17, F17, S18, S19)
 - ▷ MATH 456 Mathematical Modeling (Fall 2018)

¹F=Fall; S=Spring; W=Winter

- ▷ MATH 331 Ordinary Differential Equations for Scientists & Engineers (F15, S16, F17, F18)
 ▷ MATH 233 Multivariate Calculus (F16)
- Aristotle University of Thessaloniki, Department of Mathematical, Physical and Computational Sciences, Thessaloniki, Greece
 - \triangleright Teaching Assistant for Linear Algebra and Partial Differential Equations, September 2010-June 2013

Mentoring Experience • San Diego State University

▷ Master Theses:

- \star February 2025 present: Harshith Das Project title: TBA
- California Polytechnic State University San Luis Obispo

> Undergraduate Students:

- * September 2020 March 2022: Marisa Lee Project title: "A Roadmap to Energy Harvesting using Granular Crystal Chains" funded by RSCA
- ▷ Master Theses:
 - * November 2023 December 2024: Lindsey Langton Project title: "Circular restricted three body manifold trajectories via Koopman operator theory"
 - ★ September 2023 June 2024: Madison Lytle Project title: "Going Rogue: Existence, spectral stability and bifurcations of rogue waves in integrable and non-integrable lattice models"
 - * September 2021 June 2022: Zachary Gelber Project title: "An optimization model for minimization of systemic risk in financial portfolios"
 - ★ September 2021 June 2023: Scott Plantenga Project title: "Distributed control of servicing satellite fleet using horizon simulation framework"

▷ Senior Projects:

- \star January 2024 June 2024: Aria Devries
- Project title: "Computing quantum droplets in two-component Gross-Pitaevskii systems" * January 2021 - June 2021: Maeve Calanog
- Project title: "Time-periodic solutions in granular materials"
- \triangleright **FROST** funded research:
 - * Summer 2022: Kate Davis, Olivia Hartnett, and Connor Leipelt Project title: "The interplay of boundary conditions and spatial discretization in computing matter waves"
 - ★ Summer 2021: Andy Chiv, Riley Prendergast, and Alexis Saucerman Project title: "Computation of matter waves in atomic physics"
 - \star Summer 2020: Marisa Lee, Rachel Loh, and Harry Yan
 - Project title: "Energy localization in granular crystals for energy harvesting"

\triangleright Independent study:

- \star Fall 2023: Pablo Flores
 - Topic: "Numerical methods for PDEs"
- * Spring 2021: Scott Plantenga
 - Topic: "Numerical Optimization methods for controlling lunar landers"
- * Summer 2020: Wesley Khademi Topic: "Artificial Neural Networks and Differential Equations"
- University of Massachusetts Amherst
 - ▷ Chief Undergraduate Advisor (CUA) for the Department of Mathematics and Statistics, September 2018 - August 2019
 - ▷ Graduate Students:
 - \star September 2016 September 2017: Christian Hoffmann
 - \triangleright Undergraduate Theses:

- * September 2019 May 2020: Jimmy Hwang
- Honors Thesis title: "Formation of Bursting Events in a Lattice Dynamical System"
- * September 2018 May 2019: Jennifer Sullivan
- Honors Thesis title: "On the stability of localized solutions in the Ablowitz-Ladik model" ★ September 2018 - May 2019: Fiona McCann
- Honors Thesis title: "Dynamical Research into Bipolar Disorder: A Theoretical Approach"
- \triangleright **REU** students:
 - ★ Summer 2018: Katherine Donoghue Project title: "The formation of rogue waves in granular crystals"
 - ★ Summer 2017: Sydney Hauver and Xinyi He
 - Project title: "Study of solitary wave propagation in woodpile chains"
 - ★ Summer 2016: Anya Conti Project title: "Modeling rogue waves in the nonlinear Schrödinger equation and Ablowitz-Ladik lattice system"
- Conference and seminar organization
 - ▷ Co-organizer (with P. Kevrekidis and C. Chong) of the webinar series on "Nonlinear Waves and Coherent Structures", since September 2020
 - ▷ Co-organizer (with P. Kevrekidis and R. Carretero-González) of the special session on "Recent developments in nonlinear waves: From rogue waves and blow-ups to shocks, vortices and beyond", The 13th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA, April 14 -16, 2025
 - ▷ Co-organizer (with A. Saxena) of the special session on "Analysis and numerics of nonlinear dynamical systems", XLIV Dynamics Days Europe, Bremen, Germany, July 29 - August 2, 2024
 - ▷ Co-organizer (with N. Karachalios) of the special session on "Analysis and Numerical Computations of Evolutionary Equations: Applications and Experiments", SIAM Conference on Nonlinear Waves and Coherent Structures, Baltimore, MD, June 24 - 27, 2024
 - ▷ Member of the Scientific Program Committee of the "Second CSU Mathematical Conference", Bakersfield, CA, November 10 - 11, 2023
 - ▷ Member of the Scientific Program Committee the "First CSU Mathematical Conference", Woodland Hills, CA, November 11 - 12, 2022
 - ▷ Co-organizer (with E. Kirr) of the special session on "Waves in inhomogeneous media", SIAM Conference on Nonlinear Waves and Coherent Structures, Bremen, Germany, August 30 -September 2, 2022
 - ▷ Co-organizer (with P. Kevrekidis and R. Carretero-González) of the special session on "Nonlinear Waves in Bose-Einstein Condensates: Recent developments", The 12th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA, March 29 - April 1, 2022
 - ▷ Co-organizer (with S. Xing) of the special session on "Nonlinear Vibrations and Waves". 2nd Online Conference on Nonlinear Dynamics and Complexity, October 4 - 6, 2021
 - ▷ Co-organizer (with P. Kevrekidis) of the special session on "Nonlinear Waves in Lattice Dynamical Systems", SIAM Annual Meeting, Spokane, WA, July 19 - 23, 2021
 - ▷ Co-organizer (with R. Parker and F. Tsitoura) of the special session on "Existence and stability of nonlinear waves: theory and numerical computations", SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, May 19 - 23, 2019
 - ▷ Co-organizer (with F. Tsitoura) of the special session on "Nonlinear Evolutionary and Lattice Equations: Theory, Numerics and Experiment", The 11th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA, April 17 - 19, 2019
 - ▷ Member of the Scientific Program Committee of the IMACS International conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA, since 2018
 - ▷ Co-organizer (with J. Bramburger and R. Goh) of the Brown/BU/UMass PDE Seminar, 2018 - 2019
 - ▷ Co-organizer (with V. Rothos) of the special session on "Localized Structures in Nonlinear Evolution and Lattice Equations", SIAM Conference on Nonlinear Waves and Coherent Structures, Orange, CA, June 11 - 14, 2018

Synergistic ACTIVITIES

\triangleright	Co-organizer (with V. Rothos) of the special session on "Nonlinear Waves: Mathematical
	Methods and Applications", The 10th IMACS International Conference on Nonlinear Evo-
	lution Equations and Wave Phenomena: Computation and Theory, University of Georgia,
	Athens, GA, March 29 - April 1, 2017.

- Co-organizer (with C. Chong) of the special session on "Analysis and Applications of the Nonlinear Schrödinger Equation", SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, PA, August 8 - 11, 2016
- Accompanying REU students from UMass for the 2016 Summer Undergraduate Research Conference, Department of Mathematics and Statistics, Williams College, Williamstown, MA, July 29, 2016
- ▷ Organizer of the Nonlinear Waves Seminar, Department of Mathematics and Statistics, University of Massachusetts Amherst, MA, September 2015 September 2017
- Referee/reviewer for scientific journals, books, and funding agencies:
 - \triangleright Wave Motion, since 2024
 - $\triangleright~\mathit{Chaos},\,\mathrm{since}~2024$
 - ▷ Studies in Applied Mathematics, since 2023
 - ▷ Computer Physics Communications, since 2023
 - ▷ Physical Review Letters, since 2022
 - \triangleright National Science Foundation, since 2021
 - \triangleright Physical Review E, since 2021
 - ▷ Physica D: Nonlinear Phenomena, since 2021
 - ▷ European Physical Journal Plus, since 2021
 - ▷ Journal of Scientific Computing, since 2021
 - \triangleright Mathematical Reviews (AMS), since 2021
 - ▷ Communications in Nonlinear Science and Numerical Simulation, since 2021
 - ▷ Nonlinear Dynamics (Springer), since 2021
 - ▷ Frontiers in Physics, since 2020
 - $\triangleright~\mathit{Chaos}, \mathit{Solitons}~ \ensuremath{\mathfrak{C}}$ Fractals, since 2020
 - ▷ American Institute of Mathematical Sciences, since 2020
 - ▷ Springer, Applied Sciences, since 2018
 - \triangleright European Physical Journal B, since 2017
 - ▷ Journal of Applied Physics (AIP), since 2017
 - \triangleright Physics Letters A, since 2014

Professional	• Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS),
Memberships	since 2021

- Society for Industrial and Applied Mathematics (SIAM), since 2014
- American Mathematical Society (AMS), since 2014

RESEARCH VISITS Department of Mathematics and Statistics, University of Massachusetts Amherst, Amherst, MA, April 27 - 30, 2025

- Department of Mathematics, Texas A&M, College Station, TX, April 24 26, 2025
- Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos, NM, November 18 -22, 2024
- Department of Physics, Missouri University of Science and Technology, Rolla, MO, October 30 November 1, 2024
- Laboratoire de mathématiques Raphaël Salem, Université de Rouen Normandie, France, June 15 - September 14, 2023
- Joint visit: Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos, NM; Santa Fe Institute, Santa Fe, NM, February 6 - 13, 2023
- Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, September 5 16, 2022

- Laboratoire de mathématiques Raphaël Salem, Université de Rouen Normandie, France, July 3 July 31, 2022
- Joint visit: Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos, NM; Santa Fe Institute, Santa Fe, NM, March 9 - 12, 2020
- Department of Mathematics, University of Illinois at Urbana-Champaign, IL, August 26 28, 2019
- Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos, NM, July 11 12, 2019
- Division of Applied Mathematics, Brown University, RI, June 26 29, 2018
- The Program in Applied & Computational Mathematics, Princeton University, NJ, January 16 -18, 2017
- The Program in Applied & Computational Mathematics, Princeton University, NJ, September 15

 21, 2016
- Department of Mathematics and Statistics, San Diego State University, CA, May 15 19, 2016
- The Iby and Aladar Fleischman Faculty of Engineering, Tel Aviv University, Israel, July 5 10, 2015
- Institüt für Physik, Universität Oldenburg, Germany, August 4 October 5, 2013
- Department of Mathematics and Statistics, University of Massachusetts Amherst, MA, September October, 2012
- Institüt für Physik, Universität Oldenburg, Germany, July, 2012

• Institut d'Etudes Scientifiques de Cargése, Corsica, France

- $\triangleright\,$ "Bridging Classical and Quantum Turbulence", July 4 14, 2023
- Isaac Newton Institute for Mathematical Sciences, Cambridge, UK
 - ▷ "Analysis of dispersive systems", September 5 9, 2022
 - ▷ "Dispersive hydrodynamics: mathematics, simulation and experiments, with applications in nonlinear waves", September 9 - 16, 2022
 - $\triangleright\,$ "Integrable systems and applications", September 12 16, 2022
- Summer School for Graduate Students, Wolfersdorf, Germany
 - \triangleright 17th Saalburg Summer School on "Foundations and New Methods in Theoretical Physics", August 29 September 09, 2011
- The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy
 "School on Computational Methods in Dynamics", June 20 July 1, 2011
- School of Mathematics, Statistics and Actuarial Sciences, University of Kent, UK
 - ▷ "Classical and Quantum Integrable Models", July 19 23, 2010

Publications & Preprints²

- [49] Multi-hump Collapsing Solutions in the Nonlinear Schrödinger Problem: Existence, Stability and Dynamics
 S. Jon Chapman, M. Kavousanakis, E.G. Charalampidis, I.G. Kevrekidis and P.G. Kevrekidis arXiv:2504.09746
- [48] On the proximity of Ablowitz-Ladik and discrete Nonlinear Schrödinger models: A theoretical and numerical study of Kuznetsov-Ma solutions
 M.L. Lytle^{**}, E.G. Charalampidis, D. Mantzavinos, J. Cuevas-Maraver, P.G. Kevrekidis, N.

Schools, Seminars & Workshops

² Superscripts * and ** denote undergraduate and graduate student coauthors, respectively.

Karachalios *Wave Motion* **137**, 103547 (2025)

- [47] On the discrete Kuznetsov-Ma solutions for the defocusing Ablowitz-Ladik equation with large background amplitude
 E.C. Boadi, E.G. Charalampidis, P.G. Kevrekidis, N.J. Ossi, B. Prinari
 Wave Motion 134, 103496 (2025)
- [46] Two-component droplet phases and their spectral stability in one dimension
 E.G. Charalampidis and S.I. Mistakidis
 Phys. Rev. A 111, 013318 (2025)
- [45] CombOpNet: A Neural-Network Accelerator for SINDy S. Xing, Q. Han, and E.G. Charalampidis J. Vib. Tes. and Sys. Dyn. 9(1) (2025)
- [44] Parallel finite-element codes for the Bogoliubov-de Gennes stability analysis of Bose-Einstein Condensates
 G. Sadaka, P. Jolivet, E.G. Charalampidis and I. Danaila Comput. Phys. Commun. 306, 109378 (2025)
- [43] Learning Traveling Solitary Waves Using Separable Gaussian Neural Networks S. Xing and E.G. Charalampidis Entropy 26(5), 396 (2024)
- [42] Self-similar blowup solutions in the generalized Korteweg-de Vries equation: Spectral analysis, normal form and asymptotics
 S. Jon Chapman, M. Kavousanakis, E.G. Charalampidis, I.G. Kevrekidis and P.G. Kevrekidis Nonlinearity 37, 095034 (2024)
- [41] The application of the "inverse problem" method for constructing confining potentials that make N-soliton waveforms exact solutions in the Gross-Pitaevskii equation

F. Cooper, A. Khare, J. Dawson, E.G. Charalampidis and A. Saxena *Chaos* **34**, 043138 (2024)

- [40] Existence, stability and spatio-temporal dynamics of time-quasiperiodic solutions on a finite background in discrete nonlinear Schrödinger models
 E.G. Charalampidis, G. James, D. Hennig, N. Karachalios and P.G. Kevrekidis
 Wave Motion 128, 103324 (2024)
- [39] Discovering Governing Equations in Discrete Systems Using PINNs
 S. Saqlain, W. Zhu, E.G. Charalampidis and P.G. Kevrekidis
 Commun. Nonlinear Sci. Numer. Simulat. 126, 107498 (2023)
- [38] Uniform-density Bose-Einstein condensates of the Gross-Pitaevskii equation found by solving the inverse problem for the confining potential F. Cooper, A. Khare, J. Dawson, E.G. Charalampidis and A. Saxena Phys. Rev. E 107, 064202 (2023)
- [37] Breathers in lattices with alternating strain-hardening and strain-softening interactions
 M. Lee*, E.G. Charalampidis, S. Xing, C. Chong and P.G. Kevrekidis *Phys. Rev. E* 107, 054208 (2023)
- [36] The stability of the b-family of peakon equations
 E.G. Charalampidis, R. Parker, P.G. Kevrekidis and S. Lafortune Nonlinearity 36, 1192 (2023)
- [35] Stability of exact solutions of the (2+1)-dimensional nonlinear Schrödinger equation with arbitrary nonlinearity parameter κ
 F. Cooper, A. Khare, E.G. Charalampidis, J. Dawson and A. Saxena *Phys. Scr.* 98, 015011 (2022)

[34] A Spectral Analysis of the Nonlinear Schrödinger Equation in the Co-Exploding Frame

S. Jon Chapman, M. Kavousanakis, E.G. Charalampidis, I.G. Kevrekidis and P.G. Kevrekidis *Physica D: Non. Phen.* **439**, 133396 (2022)

- [33] Existence, Stability and Dynamics of Monopole and Alice Ring Solutions in Anti-Ferromagnetic Spinor Condensates Thudiyangal Mithun, R. Carretero-González, E.G. Charalampidis, D.S. Hall and P.G. Kevrekidis Phys. Rev. A 105, 053303 (2022)
- [32] Neural Networks Enforcing Physical Symmetries in Nonlinear Dynamical Lattices: The Case Example of the Ablowitz-Ladik Model
 W. Zhu, W. Khademi*, E.G. Charalampidis and P.G. Kevrekidis Physica D: Non. Phen. 434, 133264 (2022)
- [31] Wave manipulation using a bistable chain with reversible impurities
 H. Yasuda, E.G. Charalampidis, P.K. Purohit, P.G. Kevrekidis and J.R. Raney *Phys. Rev. E* 104, 054209 (2021)
- [30] Stability of trapped solutions of a nonlinear Schrödinger equation with a nonlocal nonlinear self-interaction potential
 E.G. Charalampidis, F. Cooper, A. Khare, J. Dawson and A. Saxena
 J. Phys. A: Math. and Theor. 55, 015703 (2021)
- [29] Numerical bifurcation and stability for the capillary-gravity Whitham equation
 E.G. Charalampidis and V.M. Hur
 Wave Motion 106, 102793 (2021)
- [28] Nonlinear Localized Modes in Two-Dimensional Hexagonally-Packed Magnetic Lattices
 C. Chong, Y. Wang, D. Maréchal, E.G. Charalampidis, M. Molerón, A.J. Martínez, M.A. Porter, P.G. Kevrekidis and C. Daraio
 New J. Phys. 23, 043008 (2021)
- [27] Behavior of solitary waves of coupled nonlinear Schrödinger equations subjected to complex external periodic potentials with odd-PT symmetry E.G. Charalampidis, F. Cooper, J. Dawson, A. Khare and A. Saxena J. Phys. A: Math. and Theor. 54, 145701 (2021)
- [26] Dark-dark soliton breathing patterns in multi-component Bose-Einstein condensates
 W. Wang, L.-C. Zhao, E.G. Charalampidis and P.G. Kevrekidis
 J. Phys. B: At. Mol. Opt. Phys. 54, 055301 (2021)
- [25] Kuznetsov-Ma breather-like solutions in the Salerno model
 J. Sullivan*, E.G. Charalampidis, J. Cuevas-Maraver, P.G. Kevrekidis and N. Karachalios Eur. Phys. J. Plus 135, 607 (2020)
- [24] Deflation-based Identification of Nonlinear Excitations of the three-dimensional Gross-Pitaevskii equation
 N. Boullé, E.G. Charalampidis, P.E. Farrell and P.G. Kevrekidis
 Phys. Rev. A 102, 053307 (2020)
- [23] Stability and response of trapped solitary wave solutions of coupled nonlinear Schrödinger equations in an external, *PT* and supersymmetric potential
 E.G. Charalampidis, J. Dawson, F. Cooper, A. Khare and A. Saxena
 J. Phys. A: Math. and Theor. 53, 455702 (2020)
- [22] Bifurcation analysis of stationary solutions of two-dimensional coupled Gross-Pitaevskii equations using deflated continuation
 E.G. Charalampidis, N. Boullé, P.E. Farrell and P.G. Kevrekidis
 Commun. Nonlinear Sci. Numer. Simulat 87, 105255 (2020)

- [21] Breathers and other time-periodic solutions in an array of cantilevers decorated with magnets
 C. Chong, A. Foehr, E.G. Charalampidis, P.G. Kevrekidis and C. Daraio Math. Engin. 1(3), 489 (2019)
- [20] Origami-based impact mitigation via rarefaction solitary wave creation
 H. Yasuda, Y. Miyazawa, E.G. Charalampidis, C. Chong, P.G. Kevrekidis and J. Yang Sci. Adv. 5, eaau2835 (2019)
- Phononic rogue waves
 E.G. Charalampidis, J. Lee, P.G. Kevrekidis and C. Chong Phys. Rev. E 98, 032903 (2018)
- [18] Lattices with internal resonator defects
 S. Hauver*, X. He*, D. Mei, E.G. Charalampidis, P.G. Kevrekidis, E. Kim, J. Yang and A. Vainchtein *Phys. Rev. E* 98, 032902 (2018)
- [17] Peregrine solitons and gradient catastrophes in discrete nonlinear Schrödinger systems

C. Hoffmann^{**}, E.G. Charalampidis, D.J. Frantzeskakis and P.G. Kevrekidis *Phys. Lett. A* **382**, 3064 (2018)

- [16] Computing stationary solutions of the two-dimensional Gross-Pitaevskii equation with deflated continuation
 E.G. Charalampidis, P.G. Kevrekidis and P.E. Farrell Commun. Nonlinear Sci. Numer. Simulat. 54, 482 (2018)
- [15] Rogue waves in ultracold bosonic seas
 E.G. Charalampidis, J. Cuevas-Maraver, D.J. Frantzeskakis and P.G. Kevrekidis Rom. Rep. Phys. 70, 504 (2018)
- [14] Discrete BPS Skyrmions
 M. Agaoglou, E.G. Charalampidis, T.A. Ioannidou and P. G. Kevrekidis
 J. Math. Phys. 58, 091501 (2017)
- [13] Revisiting Diffusion: Self-similar Solutions and the t^{-1/2} Decay in Initial and Initial-Boundary Value Problems
 P.G. Kevrekidis, M.O. Williams, D. Mantzavinos, E.G. Charalampidis, M. Choi and I.G. Kevrekidis
 Quart. Appl. Math. 75, 581 (2017)
- [12] SO(2)-induced breathing patterns in multi-component Bose-Einstein condensates E.G. Charalampidis, W. Wang, P.G. Kevrekidis, D.J. Frantzeskakis and J. Cuevas-Maraver *Phys. Rev. A* 93, 063623 (2016)
- [11] Vortex-soliton complexes in coupled nonlinear Schrödinger equations with unequal dispersion coefficients
 E.G. Charalampidis, P.G. Kevrekidis, D.J. Frantzeskakis and B.A. Malomed
 Phys. Rev. E 94, 022207 (2016)
- [10] Nonlinear vibrational-state excitation and piezoelectric energy conversion in harmonically driven granular chains
 C. Chong, E. Kim, E.G. Charalampidis, H. Kim, F. Li, P.G. Kevrekidis, J. Lydon, C. Daraio and J. Yang *Phys. Rev. E* 93, 052203 (2016)
- [9] Formation of rarefaction waves in origami-based metamaterials H. Yasuda, C. Chong, E.G. Charalampidis, P.G. Kevrekidis and J. Yang *Phys. Rev. E* 93, 043004 (2016)
- [8] Wormholes from chiral fields
 E.G. Charalampidis, T.A. Ioannidou, B. Kleihaus and J. Kunz
 J. Phys. Conf. Ser. 574, 012058 (2015)

- [7] Time-Periodic Solutions of Driven-Damped Trimer Granular Crystals E.G. Charalampidis, F. Li, C. Chong, J. Yang and P.G. Kevrekidis Math. Prob. in Eng. 2015, 830978 (2015)
- [6] Lattice three-dimensional skyrmions revisited
 E.G. Charalampidis, T.A. Ioannidou and P.G. Kevrekidis
 Phys. Scr. 90, 025202 (2015)
- [5] Dark-bright solitons in coupled nonlinear Schrödinger equations with unequal dispersion coefficients
 E.G. Charalampidis, P.G. Kevrekidis, D.J. Frantzeskakis and B.A. Malomed
 Phys. Rev. E 91, 012924 (2015)
- [4] Vector rogue waves and dark-bright boomeronic solitons in autonomous and nonautonomous settings
 R. Babu Mareeswaran, E.G. Charalampidis, T. Kanna, P.G. Kevrekidis and D.J. Frantzeskakis *Phys. Rev. E* 90, 042912 (2014)
- [3] Rogue waves in nonlinear Schrödinger models with variable coefficients: Application to Bose-Einstein condensates
 J.S. He, E.G. Charalampidis, P.G. Kevrekidis and D.J. Frantzeskakis
 Phys. Lett. A 378, 577 (2014)
- Wormholes threaded by chiral fields
 E.G. Charalampidis, T.A. Ioannidou, B. Kleihaus and J. Kunz Phys. Rev. D 87, 084069 (2013)
- Skyrmions, rational maps and scaling identities E.G. Charalampidis, T.A. Ioannidou and N.S. Manton J. Math. Phys. 52, 033509 (2011)
- INVITED TALKS & SEMINARS
- 61. Conference on "Dynamics of Coherent Structures in Discrete and Continuum Nonlinear Systems", Banff International Research Station for Mathematical Innovation and Discovery (BIRS) & Institute of Mathematics at the University of Granada (IMAG), University of Granada, Spain, June 8 June 13, 2025. Talk title: TBA
 - Conference on "Wave dynamics, integrability and beyond", Sardinia, Italy, May 26 May 30, 2025. Talk title: TBA
 - 59. SIAM Conference on Applications of Dynamical Systems, Denver, CO, May 11 15, 2025. Talk title: "Existence and stability of rogue waves in discrete models"
 - Colloquium, Department of Mathematics and Statistics, University of Massachusetts Amherst, Amherst, MA, April 29, 2025. Talk title: "Computing self-similar solutions to nonlinear dispersive PDEs"
 - 57. Colloquium, Department of Mathematics, Texas A&M, College Station, TX, April 25, 2025. Talk title: "Computing self-similar solutions to nonlinear dispersive PDEs"
 - 56. The 13th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA, April 14 - 16, 2025. Talk title: "On the blow-up of 1D nonlinear dispersive equations: Theory and computations"
 - 55. AMS 2025 Spring Central Sectional Meeting, University of Kansas, Lawrence, KS, March 29 30, 2025. Talk title: "Spectral analysis of blow-up in nonlinear dispersive PDEs: Theory and computations"
 - 54. 2024 CMS Winter Meeting, Kwantlen Polytechnic University, Richmond Campus, Richmond, BC, Canada, November 29 December 2, 2024. Talk title: "Computational Analysis of self-similar blow-up in nonlinear dispersive PDEs"

- 53. Colloquium, Computational Science Research Center, San Diego State University, San Diego, CA, November 8, 2024. Talk title: "From Nonlinear Optics to Ultra-Cold Atomic Physics and Rogue Waves: Adventures in Applied and Computational Mathematics"
- 52. Colloquium, Department of Physics, Missouri University of Science and Technology, Rolla, MO, October 31, 2024. Talk title: "From Nonlinear Optics to Ultra-Cold Atomic Physics and Rogue Waves: Adventures in Applied and Computational Mathematics"
- AMS Fall Southeastern Sectional Meeting, Georgia Southern University, Savannah, GA, October 5 - 6, 2024. Talk title: "Computational Analysis of self-similar blow-up in nonlinear dispersive PDEs"
- 50. XLIV Dynamics Days Europe, Bremen, Germany, July 29 August 2, 2024. Talk title: "Computing self-similar solutions to NLS equations: A computational/bifurcation analysis approach"
- 49. 11th European Nonlinear Dynamics Conference, Delft, Netherlands, July 22 26, 2024. Talk title: "The computation and spectral analysis of blow-up solutions to nonlinear dispersive PDEs"
- 48. SIAM Conference on Nonlinear Waves and Coherent Structures, Baltimore, MD, June 24 27, 2024. Talk title: "Self-similar collapse to nonlinear dispersive PDEs: A computational/bifurcation analysis approach"
- 47. Colloquium, Department of Mathematics, University of Kansas, Lawrence, KS, April 10, 2024. Talk title: "From Nonlinear Optics to Ultra-Cold Atomic Physics and Rogue Waves: Adventures in Applied and Computational Mathematics"
- 46. Colloquium, Department of Mathematics and Statistics, San Diego State University, San Diego, CA, February 15, 2024. Talk title: "From Nonlinear Optics to Ultra-Cold Atomic Physics and Rogue Waves: Adventures in Applied and Computational Mathematics"
- 45. Colloquium, Department of Mathematics, Kennesaw State University, Marietta, GA, October 13, 2023. Talk title: "Recent advances in atomic Bose-Einstein Condensates: From Theory to Computation"
- 44. "Bridging Classical and Quantum Turbulence", Institut d'Études Scientifiques, Cargese, Corsica, France, July 4 July 14, 2023. Talk title: "The Computation of Vortical Patterns in Bose-Einstein Condensates with Deflation: Existence, stability, and dynamics
- 43. Colloquium, Department of Mathematics, University of California Santa Barbara, Santa Barbara, CA, June 9, 2023. Talk title: "The computation of matter waves in Bose-Einstein Condensates: Existence, stability, and bifurcations"
- 42. The 13th AIMS Conference on Dynamical Systems and Differential Equations, University of North Carolina Wilmington, May 31 June 4 2023. Talk title: "Extreme nonlinear excitations in lattice and continuum models"
- 41. SIAM Conference on Applications of Dynamical Systems, Portland, OR, May 14 18, 2023. Talk title: "Self-similar collapse to the NLS: A bifurcation analysis approach"
- 40. Colloquium, Department of Mathematics, University of Alabama, Birmingham, AL, February 17, 2023. Talk title: "Computing Nonlinear Waves in Bose-Einstein Condensates and Beyond: Adventures in Applied Mathematics"
- Colloquium, Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos, NM, February 7, 2023. Talk title: "Rogue Waves in Continuous and Discrete Models"

- 38. Colloquium, Department of Mathematics and Statistics, Amherst College, Amherst, MA, February 2, 2023. Talk title: "From Newton's method and Eigenvalue Problems to Deflation and Bose-Einstein Condensates: Adventures in Applied Mathematics"
- Colloquium, Mathematics Department, California Polytechnic State University, San Luis Obispo, CA, November 18, 2022. Talk title: "Recent advances on extreme events in discrete and continuous models"
- AMS Fall Eastern Sectional Meeting, University of Massachusetts Amherst, Amherst, MA, October 1 - 2, 2022. Talk title: "Recent advances on Rogue waves in continuous and discrete models"
- 35. SIAM Conference on Nonlinear Waves and Coherent Structures, Bremen, Germany, August 30 - September 2, 2022. Talk title: "Novel coherent structures to single- and multi-component NLS systems: Theory and Computation"
- 34. Conference on "Nonlinear waves and networks", Institut National des Sciences Appliquées (INSA) de Rouen Normandie, France, July 4 - July 5, 2022. Talk title: "Recent Advances on Localized Solutions in NLS systems: Theory and Computation"
- 33. The 12th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA, March 30 April 1, 2022. Talk title: "Recent advances in single and multi-component NLS systems"
- Colloquium, Mathematics Department, California Polytechnic State University, San Luis Obispo, CA, November 19, 2021. Talk title: "Recent Advances in Nonlinear Waves: Theory and Computation"
- 31. SIAM Annual Meeting, Spokane, WA, July 19 23, 2021. Talk title: "Rogue waves in integrable and non-integrable systems: Existence, stability and dynamics"
- 2021 Application of Mathematics in Technical and Natural Sciences (AMiTaNS) conference, Albena, Bulgaria, June 24 - 29, 2021. Talk title: "Bifurcation analysis tools for Nonlinear Complex Dynamical Systems"
- 29. SIAM Conference on Applications of Dynamical Systems, Portland, OR, May 23 27, 2021. Talk title: "Rogue waves in continuous and discrete models: Existence, stability and dynamics"
- 28. SIAM Conference on Analysis of Partial Differential Equations, La Quinta, CA, December 11 - 14, 2019. Talk title: "Bifurcation analysis of nonlinear PDEs using deflated continuation"
- Colloquium, Mathematics Department, California Polytechnic State University, San Luis Obispo, CA, October 25, 2019. Talk title: "Deflated Continuation: A bifurcation analysis tool for Nonlinear Complex Dynamical Systems"
- Colloquium, Department of Mathematics, University of Illinois at Urbana-Champaign, IL, August 27, 2019. Talk title: "Deflated Continuation: A bifurcation analysis tool for Nonlinear Schrödinger (NLS) Systems"
- Colloquium, Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos, NM, July 12, 2019. Talk title: "Deflated Continuation: A bifurcation analysis tool for Nonlinear Schrödinger (NLS) Systems"
- 24. SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, May 19 23, 2019. Talk title: "Bifurcation analysis in NLS systems using deflated continuation"

- 23. The 11th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA, April 17 19, 2019. Talk title: "Formation of extreme events in nonlinear Schrödinger (NLS) systems"
- 22. Colloquium, Department of Mathematics, New York Institute of Technology, Old Westbury, NY, February 26, 2019. Talk title: "Nonlinear waves: From optics to matter waves and beyond"
- Colloquium, Department of Applied Mathematics and Statistics, Johns Hopkins University, Baltimore, MD, February 15, 2019. Talk title: "Nonlinear waves: From optics to matter waves and beyond"
- 20. Colloquium, Department of Mathematics and Statistics, San José State University, San José, CA, February 11, 2019. Talk title: "Nonlinear waves: From optics to matter waves and beyond"
- 19. Colloquium, Mathematics Department, California Polytechnic State University, San Luis Obispo, CA, February 8, 2019. Talk title: "Nonlinear waves: From optics to matter waves and beyond"
- Nonlinear Waves Seminar, Department of Mathematics and Statistics, University of Massachusetts Amherst, MA, December 7, 2018. Talk title: "Rogue waves in ultracold physics: from continuous to discrete models"
- 17. Colloquium, Department of Mathematics, Bowdoin College, Brunswick, ME, May 3, 2018. Talk title: "Nonlinear waves in atomic Bose-Einstein Condensates: Theory and Computation"
- Brown/Boston University Dynamics and PDEs Seminar, Brown University, Providence, RI, April 19, 2018. Talk title: "Formation of rogue waves in continuous and discrete models: Theory and Computation"
- AMS Spring Central Sectional Meeting, Ohio State University, Columbus, OH, March 17 18, 2018. Talk title: "Formation of rogue waves in continuous and discrete models: Theory and Computation"
- 14. Colloquium, William E. Boeing Department of Aeronautics & Astronautics, University of Washington, Seattle, WA, October 6, 2017. Talk title: "Nonlinear waves in Granular Crystals"
- 13. The IV AMMCS International Conference, Wilfrid Laurier University, Waterloo, ON, Canada, August 20 25, 2017. Talk title: "Nonlinear waves in nonlinear Schrödinger (NLS) systems"
- 12. The 10th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA, March 29 April 1, 2017. First talk title: "Formation of rogue waves in nonlinear Schrödinger (NLS) systems: Theory and Computation"; second talk title: "Multi-component nonlinear waves in nonlinear Schrödinger (NLS) systems"
- AMS Spring Southeastern Sectional Meeting, College of Charleston, Charleston, SC, March 10

 12, 2017. Talk title: "Multi-component nonlinear Schrödinger (NLS) systems: From Theory to Numerical Computations"
- 10. Colloquium, Department of Mathematics, Miami University, Oxford, OH, January 25, 2017. Talk title: "Nonlinear waves in NLS systems and beyond: Theory and Computation"
- AMS Fall Eastern Sectional Meeting, Bowdoin College, Brunswick, ME, September 24 25, 2016. Talk title: "Multi-component nonlinear waves in one and two dimensional coupled nonlinear Schrödinger (NLS) systems: Theory and Numerical Computations"

- 8. Colloquium, Department of Mathematics and Statistics, San Diego State University, San Diego, CA, May 16, 2016. Talk title: "Dark-bright solitons and their two-dimensional counterparts in coupled nonlinear Schrödinger (NLS) Systems"
- Colloquium, Department of Mathematics, Bowdoin College, Brunswick, ME, March 8, 2016. Talk title: "Dark-bright solitons and their two-dimensional counterparts in coupled nonlinear Schrödinger (NLS) Systems"
- Emergent Paradigms in Nonlinear Complexity: From PT-Symmetry to Nonlinear Dirac Systems, From Polaritons to Skyrmions, Santa Fe Institute, Santa Fe, NM, June 8 10, 2015. Talk title: "Skyrmions, Topology and Geometry"
- SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, May 17 21, 2015. Talk title: "Vector Rogue Waves and Dark-Bright Boomeronic Solitons in Autonomous and Non-Autonomous Settings"
- 4. The 9th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA, April 1 - 4, 2015. Talk title: "Dark-bright solitons in coupled nonlinear Schrödinger (NLS) equations with unequal dispersion coefficients"
- 3. Colloquium, Institüt für Physik, Universität Oldenburg, Germany, September 27, 2013. Talk title: "Topological properties of the Skyrme model"
- 2. Nonlinear Waves Seminar, Department of Mathematics and Statistics, University of Massachusetts Amherst, MA, September 28, 2012. Talk title: "Skyrmions, rational maps and scaling identities"
- 1. IMA's Conference on Nonlinearity and Coherent Structures, University of Reading, UK, July 6 8, 2011. Talk title: "Skyrmions, rational maps and scaling identities"

CONFERENCE PRESENTATIONS & PARTICIPATION

- 12. Second CSU Mathematical Sciences Conference, Bakersfield, CA November 10 11, 2023. Talk title: "Spectral analysis of self-similar collapsing solutions to the NLS"
- 11. 2nd Online Conference on Nonlinear Dynamics and Complexity, October 4 6, 2021. Talk title: "Formation of rogue waves in continuous and discrete models"
- 10. 2019 Joint Mathematics Meeting (AMS & MAA), Baltimore, MD, January 16 19, 2019. Talk title: "Peregrine solitons and gradient catastrophes in continuous and discrete NLS systems"
- SIAM Conference on Nonlinear Waves and Coherent Structures, Orange, CA, June 11 14, 2018. Talk title: "Formation of rogue waves in continuum and discrete models: Theory and Computation"
- 8. SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, PA, August 8 11, 2016. Talk title: "Dark-bright solitons and their two-dimensional counterparts in coupled nonlinear Schrödinger (NLS) Systems"
- 7. Nonlinear Waves Seminar, Department of Mathematics and Statistics, University of Massachusetts Amherst, MA, February 12, 2016. Talk title: "Skyrmions, Topology and Geometry"
- 6. Conference on Computational Methods in Dynamics, The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy, July 4 8, 2011
- 5. Young Researchers in Mathematics 2011, Mathematics Institute, University of Warwick, UK, April 14 16, 2011. Talk title: "Skyrmions, rational maps and scaling identities"

- 4. Department of Mathematical, Physical and Computational Sciences, Aristotle University of Thessaloniki, Greece, December 2010. 1st meeting of PhD candidates. Talk title: "Skyrmions, rational maps and scaling identities"
- 3. Geometry and Physics in Cracow, Institute of Mathematics, Jagiellonian University, Cracow, Poland, September 21 25, 2010. Poster presentation
- 2. 10th Hellenic School and Workshops on Elementary Particle Physics and Gravity, Corfu, Greece, September 8 12, 2010
- 1. 2010 Workshop on Recent Advances in Particle Physics, Aristotle University of Thessaloniki, Thessaloniki, Greece, March 25 28, 2010
- COMPUTER SKILLS Computer proficient: Operating systems Linux, Unix, MacOS, Windows
 - Programming Languages: Fortran, C/C++, Python, Bash scripting, Java
 - Software: Mathematica, MATLAB, Julia, Maple, FreeFem++, PETSc, SLEPc, continuation and bifurcation software AUTO, COCO, and pde2path, REDUCE algebra system, ROOT
 - Parallel Programming: OpenMP & MPI

Other activities & Interests

- OTHER ACTIVITIES Jazz and classical harmony; degree in jazz guitar, June 2008
 - Acoustic and electric guitar instructor at the Conservatory of Municipality of Ampelokipoi, Thessaloniki, Greece, October 2007 - January 2008
 - Electronics: Design and construction of hi-fi tube amplifiers
 - Sports: Participated in weightlifting competitions (Gold medal in the Northern Greece Championship), 1997 2000
 - Philosophy of Science, history of music and physics; literature