Theodoros P. Horikis

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Employment History

Dec 2020 – present	**Professor**, Department of Mathematics, University of Ioannina (Election: Jul 2020)
Sep 2020 – Aug 2021 Dec 2017 – Aug 2019	**Chair of Applied and Computational Mathematics Section**, Department of Mathematics, University of Ioannina (on sabbatical leave Feb 2019 – Jul 2019)
Sep 2020 – Mar 2021	**Graduate Chair**, Department of Mathematics, University of Ioannina
Feb 2019 – Jul 2019	**Sabbatical leave**. Visiting P.G. Kevrekidis, Department of Mathematics and Statistics, University of Massachusetts, Amherst, and, M.J. Ablowitz, Department of Applied Mathematics, University of Colorado, Boulder
Nov 2016 – Nov 2020	**Associate Professor**, Department of Mathematics, University of Ioannina (Election: Jun 2016)
Jan 2011 – Oct 2016	**Assistant Professor**, Department of Mathematics, University of Ioannina (Election: Jun 2009, tenured since Feb 2015)
Mar 2010 – Jun 2010	**Visiting Research Associate**, Department of Applied Mathematics, University of Colorado
Sep 2008 – Aug 2009	**Visiting Lecturer**, Department of Computer Science and Technology, University of Peloponnese
Aug 2006 – Jul 2008	**Research Associate and Lecturer**, Department of Applied Mathematics, University of Colorado. **Advisor**: Professor Mark J. Ablowitz
May 2004 – Jun 2006	**Postdoctoral Fellow**, Department of Engineering Sciences and Applied Mathematics, Northwestern University. **Advisor**: Professor William L. Kath
Sep 2002 – Nov 2003	**Military Service**, Sergeant of the Greek Ground Military Forces
Jan 2002 – Jun 2002	**Research Associate**, Department of Mathematics, Imperial College, London. **Advisor**: Professor John N. Elgin
Oct 2000 – Jun 2002	**Occasional Teacher**, Department of Mathematics, London School of Economics
Oct 1998 – Jun 2002	**Teaching Assistant**, Department of Mathematics, Imperial College, London

Education

Oct 1999 – Dec 2001	**PhD in Mathematics**, Department of Mathematics, Imperial College, London. **Advisor**: Professor John N. Elgin. **Thesis title**: *Soliton radiation in an optical fiber*. The thesis is concerned with the precise manner in which radiation interacts with an optical soliton of the scalar Nonlinear Schrödinger Equation (NLS) in anomalously dispersive optical fibres and of the vector NLS in birefringent optical fibres.

Oct 1998 – Dec 2001 ◊ **Diploma of Imperial College**, Department of Mathematics, Imperial College, London. **Advisor**: Professor John N. Elgin

Sep 2000 ◊ **An Introduction to Teaching and Learning**, Two day workshop, London School of Economics

Jun 2000 ◊ **Research Council's Graduate Schools Programme**. The five day residential course covers: Awareness of personal transferable skills and attributes, skills and processes required for team building, techniques needed for personal career management.

Oct 1998 – Jun 1999 ◊ **Advanced Research on Partial Differential Equations**, Department of Mathematics, Imperial College, London. **Advisor**: Professor Athanasios S. Fokas

Sep 1994 – Jul 1998 ◊ **Ptychion (four year BSc) in Physics**, Department of Physics, University of Crete. **Undergraduate Projects**: Numerical solution of the Schrödinger equation with a quartic potential, Proof of existence of breathers in weakly coupled oscillators, Two dimensional fluid flow and complex variables.

Teaching Experience

Jan 2011 – present ◊ **University of Ioannina**. Undergraduate courses: Differential and Integral Calculus (Departments of Physics and Computer Science and Engineering, first year course), Advanced Calculus II (Calculus of Integration, first year course), Introduction to Numerical Analysis (second year course), Classical Mechanics (third year course), Techniques of Mathematical Modeling (third year course), Introduction to Mathematical Physics (fourth year course), Linear and Nonlinear Waves (fourth year course), Calculus of Variations (fourth year course). Graduate courses: Methods of Applied Mathematics I and II, Partial Differential Equations, Special Topics in Mechanics, Numerical Solution of Partial Differential Equations, Calculus of Complex Functions and Applications.

Oct 2008 – Jun 2009 ◊ **University of Peloponnese, Department of Computer Science and Technology**. Courses: Physics I, Probability and Statistics (first year courses)

Oct 2006 – Jun 2008 ◊ **University of Colorado at Boulder, Department of Applied Mathematics**. Courses: Calculus II (first year course), Differential Equations and Linear Algebra (second year course)

Oct 2005 – Jun 2006 ◊ **Northwestern University, Engineering Sciences and Applied Mathematics Department**. Courses: Multiple Integration and Vector Calculus (first year course), Nonlinear Waves (graduate course)

Oct 2000 – Jun 2002 ◊ **London School of Economics**, Occasional Teacher. Courses: Calculus, Advanced Calculus

Oct 1999 – Jun 2002 ◊ **Imperial College, London**, Teaching Assistant. Departments of: Mathematics, Electrical Engineering, Mechanical Engineering, Material Sciences, Earth Resources

Students

Oct 2024 – present ◊ Spyridon Katsoudas, Member of his Ph.D. committee. Thesis title: *Advanced numerical solutions for three dimensional geometries in biomedical applications with emphasis in turbulence and integrating AI approach*

In progress ◊ Foteini Stavropoulou, M.Sc. student. Thesis title: *Study of the analytical solutions of the nonlocal nonlinear Schrödinger equation*

Jun 2024 ◊ Evaggelia Solomou, M.Sc. student. Thesis title: *Extended shallow water equations and asymptotic integrability*

Jun 2024 ◊ Dimitra Mavrou, M.Sc. student. Thesis title: *Direct methods and bilinearization in the study of nonlinear evolution equations: The Hirota method*

Jun 2018 – Dec 2023 ◊ Georgios Koutsokostas (University of Athens), Member of his Ph.D. committee. Thesis title: *Nonlinear waves and solitons in media with nonlocal nonlinearity*

Dec 2022 ◊ Marcos Caso Huerta (Northumbria University), External examiner for his Ph.D. Thesis title: *A new model of long wave-short wave interaction generalising the Yajima-Oikawa and Newell systems: Integrability and linear stability spectra*

Jun 2022 ◊ Nikolaos Xatzitzisis (University of Crete), Member of his Ph.D. committee. Thesis title: *Semiclassical WKB problems for non-self-adjoint Dirac operators with decaying potentials*

Oct 2019 ◊ Anna Rizaki, M.Sc. student. Thesis title: *Qualitative analysis of differential equations: Phase plane analysis*

Oct 2018 ◊ Danai Gartzonika, M.Sc. student. Thesis title: *The water wave equations: Shallow and deep water waves*

Oct 2018 ◊ Elena Tsakanika, M.Sc. student. Thesis title: *Lagrange formalism for the study of evolution partial differential equations*

Jun 2017 ◊ Aikaterini Gkogkou, M.Sc. student. Thesis title: *Dark soliton dynamics under the effect of perturbations*

Jun 2017 ◊ Christos Michail, M.Sc. student. Thesis title: *Study of the Gross-Pitaevskii equation under the Thomas-Fermi approximation*

Jul 2016 ◊ Foteini Tsitoura (University of Athens), Member of her Ph.D. committee. Thesis title: *Dynamics, generation and manipulation of solitons in Bose-Einstein condensates*

Awards and Distinctions

2024 ◊ **Thessaloniki International Trade Fair-Exhibition**. Represented, along with M. Xenos, the School of Sciences, University of Ioannina. Title of the presentation: "*Ride the Wave, Go with the Flow*".

2024 ◊ **Public Investments Program**. Member of the Department of Mathematics team, awarded €155,000.

2020 ◊ **Dioni: Computational Infrastructure for Processing and Analyzing Big Data** (P.I. S. Nikolopoulos as Vice Dean). Member of the University of Ioannina team, awarded €3,000,000.

2019 ◊ **Interview from Phys.org**. Publication number 56. Interview title: *Patterns typically observed in water can also be found in light*

2018 ◊ **Nikolaos K. Artemiadis award on Mathematical Analysis**. Publication number 49. Academy of Athens.

2016 ◊ **Article selected by the Editors of J. Opt. Highlights 2016**. Publication number 43. This award acknowledges an article for its high novelty, scientific impact and broad appeal.

2016 ◊ **Article chosen for IOP LabTalk**. Publication number 43. LabTalk title: "*Giving shape to light using mode-locked lasers*"

2016 ◊ **Cover image of J. Phys. A 49, 2016**. Publication number 42.

2015 ◊ **Article chosen for IOP LabTalk**. Publication number 38. LabTalk title: "*Can a laser operate in the absence of light?*"

2015 ◊ **Article chosen for IOP Insights**. Publication number 37. Insights title: "*Humps, bumps, dips and other structures in liquid crystals*"

2014 ◊ **University of Ioannina Internal Grant**. Awarded €14,000 for Computers Lab equipment (joint with M. Xenos)

2014 ◊ **Induction speech in Honorary Doctorate ceremony**. Introduced the work and achievements of Professor Mark J. Ablowitz

2011 ◊ **Article appeared in the Virtual Journal of Laser**. Publication number 27. The Virtual Journal of Laser is a web tool to help laser researchers follow new publications from major academic journals

Apr 2008 ◊ **Nominated for the Sullivan-Carlson award for excellence in teaching**. Nominations are placed strictly by the students of the University of Colorado. The nomination read: "*He is the best professor I've ever had. He teaches in a simple and concise manner and really cares about how his students perform. He is always fair and you are never afraid to talk to him about anything. He has obviously taken lots of time developing his teaching style and is constantly improving it whenever he can. Also, he is one of the smartest people I have ever come across and his knowledge of mathematics, science, and engineering is incredible.*"

2008 ◊ **Articles appeared in the Virtual Journal of Ultrafast Science**. Publications number 11, 12 and 16. Papers are selected as important contributions by the American Physical Society

2006 ◊ **Elected Member of the Institute of Physics**, Election date: February 2006

Dec 2001 ◊ **Completed PhD in two years** (half of the expected time), (First in my year to graduate) Imperial College, London

1998 – 2001 ◊ **Graduate studies supported by the EPSRC**, Department of Mathematics, Imperial College, London

Jul 1998 ◊ **Graduated second from a class of 100**, Department of Physics, University of Crete

Jul 1996 ◊ **First prize scholarship for academic accomplishments**, Department of Physics, University of Crete

1988 – 1994 ◊ **Distinction for every class completed**, Secondary education (six awards in total)

Administrative Duties (2011 – present)

1. Dean of Sciences selection Committee
2. Appeals Committee Hellenic Foundation for Research and Innovation (H.F.R.I.) (Chair / Vice Chair)
3. Complaints and Appeals Evaluation Committee, University of Ioannina
4. Graduate Chair

5. Chair of Applied and Computational Mathematics Section
6. Temporary Academic Stuff Hiring Committee (Coordinator)
7. Graduate Studies Committee (Member)
8. Internal Evaluation Committee (Member)
9. Undergraduate Studies Committee (Member)
10. International Relations, Scientific Development and Grant Proposals Committee (Coordinator)
11. Departmental Library Committee (Member and Coordinator)
12. Scientific Planning and Development Committee (Member)
13. Departmental Colloquium Committee (Coordinator and Member)
14. Maintenance (including building and heating management) Committee (Member)
15. Purchased items Committee (Member)

Conferences (Participation and Organization)

Jul 2023 ♢ **PDEs for wave propagation in shallow water**. Dynamical Systems and Complexity (summer school and conference), Athens, Greece

Apr 2023 ♢ **Workshop in Numerical Analysis in honor of Professor Emeritus D. Noutsos**. Member of the Local Organizing Committee, Ioannina, Greece

Apr 2023 ♢ **Light and water: Two unlike partners**. 14th Electrical and Computer Engineering Student Conference (ΣΦΗΜΜΥ), Volos, Greece

Apr 2022 ♢ **Workshop: A Day of Mathematics**. Organizer, Department of Mathematics, University of Ioannina, Greece

Jun 2021 ♢ **Integrable reductions and solitons of a nonlocal nonlinear Schrödinger equation**. New horizons in dispersive hydrodynamics, Cambridge, UK

Jul 2019 ♢ **Forty-something waves**. Dynamical Systems and Complexity (summer school and conference), Athens, Greece

Jul 2019 ♢ **Light meets water in nonlocal media**. 3rd IMA Conference on Nonlinearity and Coherent Structures, Newcastle, UK

Mar 2019 ♢ **Light meets water in nonlocal media**. AMS Spring Central Western Sectional Meeting, Hawaii, USA

Aug 2018 ♢ **Dynamics under the nonlinear Schrödinger equation with higher order effects**. Modern Mathematical Methods in Science and Technology, Kalamata, Greece

Oct 2017 ♢ **Light meets water in nonlocal media**. Workshop on Mathematical Physics and Integrable Systems, Patras, Greece

May 2017 ♢ **Light meets water in nonlocal media**. Workshop on Nonlinear Waves and Integrable Systems, Rosh Pinna, Israel

Oct 2016 ♢ **Monsters of the deep: Rogue waves**. Workshop on Mathematical Physics and Integrable Systems, Patras, Greece

Aug 2015 ♢ **Monsters of the deep: Rogue waves**. Modern Mathematical Methods in Science and Technology, Kalamata, Greece

June 2015 ♢ **Dynamics under the nonlinear Schrödinger equation with higher order effects.** Workshop on Nonlinear Waves and Integrable Systems, Malta

May 2015 ♢ **Monsters of the deep: Rogue waves.** Nonlinear Evolution Equations and Dynamical Systems, Sardinia, Italy

Oct 2014 ♢ **Life without integrability: Perturbation theory.** Workshop on Mathematical Physics and Integrable Systems, Patras, Greece

Jul 2014 ♢ **Perturbation theory for the defocusing nonlinear Schrödinger equation.** The 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Madrid, Spain

Apr 2014 ♢ **Monsters of the deep: Rogue waves.** Workshop on Nonlinear Waves and Integrable Systems, Sicily, Italy

May 2013 ♢ **Perturbation theory for the defocusing nonlinear Schrödinger equation.** Nonlinear Schrödinger Equation: Theory and Applications, Heraklion, Greece

Sep 2012 ♢ **Solitons and spectral renormalization methods in nonlinear optics.** Fifth Conference on Numerical Analysis (NumAn 2012) - Recent Approaches to Numerical Analysis: Theory, Methods and Applications, Ioannina, Greece

Aug 2012 ♢ **Dark soliton perturbation theory.** Modern Mathematical Methods in Science and Technology, Kalamata, Greece

Jul 2012 ♢ **Local Organizing Committee.** Nonlinear Evolution Equations and Dynamical Systems, Chania, Greece

May 2012 ♢ **Solitons in mode-locked lasers.** Frontiers in Applied and Computational Mathematics (FACM '12), New Jersey Institute of Technology, Newark, New Jersey, USA

Nov 2011 ♢ **Perturbed dark solitons of the nonlinear Schrödinger equation.** Joint international congress of the American and South African Mathematical Societies, Port Elizabeth, South Africa

Aug 2007 ♢ **Solitons in mode-locked lasers.** Mini-workshop on Nonlinear waves, University of Colorado, Boulder, Colorado, USA

Jan 2006 ♢ **Bragg fibers with arbitrary shape and refractive index profile.** Air Force Research Laboratory/Air Force Office of Scientific Research, Electromagnetics Workshop, San Antonio, Texas, USA

Sep 2000 ♢ **Important developments in communication systems.** Science Shorts at the British Association Meeting 2000, Imperial College, London, UK

Seminars

Apr 2024 ♢ **Dark soliton propagation under perturbations**, Department of Physics, Aristotle University of Thessaloniki, Greece

May 2023 ♢ **Forty (something) waves**, Department of Mathematics, University of Thessaly, Greece

May 2022 ♢ **Light meets water in nonlocal media**, Online seminar on nonlinear water waves and related topics, Department of Mathematics and Information Ibaraki University, Japan

Dec 2021 ♢ **Forty (something) waves: How to construct the relative equations**, Department of Mathematics, Aristotle University of Thessaloniki, Greece

Nov 2021 ♢ **Generalized shallow water wave equations**, Department of Mathematics, University of the Aegean, Greece

Jun 2019 ♢ **Light meets water in nonlocal media**, Department of Mathematics, Istanbul Technical University, Istanbul, Turkey

Apr 2019 ♢ **Integrable reductions of a nonlocal nonlinear Schrödinger equation and its variants**, Department of Mathematics and Statistics, University of Massachusetts, Amherst, USA

Apr 2019 ♢ **Monsters of the deep: Rogue waves**, Department of Mathematics and Statistics, University of Massachusetts, Amherst, USA

Mar 2018 ♢ **Monsters of the deep: Rogue waves**, Department of Physics, University of Crete, Greece

Mar 2018 ♢ **Monsters of the deep: Rogue waves**, Department of Mathematics, National and Kapodistrian University of Athens, Greece

May 2017 ♢ **Monsters of the deep: Rogue waves**, Department of Mathematics, University of the Aegean, Greece

Dec 2016 ♢ **Monsters of the deep: Rogue waves**, Department of Mathematics and Applied Mathematics, University of Crete, Greece

Apr 2016 ♢ **Monsters of the deep: Rogue waves**, Department of Civil Engineering, University of Thessaly, Greece

Oct 2015 ♢ **Monsters of the deep: Rogue waves**, Department of Mathematics, University of Ioannina, Greece

Feb 2015 ♢ **Monsters of the deep: Rogue waves**, Department of Applied Mathematics, University of Colorado at Boulder, USA

Feb 2015 ♢ **Monsters of the deep: Rogue waves**, Department of Mathematics, University of Colorado at Colorado Springs, USA

Feb 2015 ♢ **Soliton perturbation theory for problems with non-vanishing boundary conditions**, School of Applied Mathematics and Natural Sciences, Section of Mathematics, National Technical University of Athens, Greece

Apr 2012 ♢ **Can we hear the shape of a drum?**, Department of Mathematics, University of Ioannina, Greece. Seminar given to the graduate students of the Department

Apr 2011 ♢ **Nonlinear waves: from oceans to lasers**, Department of Mathematics, University of Ioannina, Greece

Apr 2010 ♢ **Excited Bose-Einstein condensates: Quadrupole oscillations and dark solitons**, Department of Mathematics, University of Colorado at Colorado Springs, USA

Apr 2010 ♢ **The short pulse equation and its variants**, Department of Applied Mathematics, University of Colorado at Boulder, USA

Apr 2010 ♢ **Excited Bose-Einstein condensates: Dark solitons and quadrupole oscillations**, Department of Applied Mathematics, University of Colorado at Boulder, USA

Jul 2009 ♢ **Rulers of light: Measuring time with light**, Department of Physics, University of Salento, Italy

Feb 2009 ♢ **Rulers of light: The mathematics of measuring time with light**, Department of Mathematics, University of Ioannina, Greece

Oct 2008 ♢ **Pulse propagation in mode-locked lasers**, Department of Computer Science and Technology, University of Peloponnese, Greece

Nov 2007 ♢ **Pulse propagation in mode-locked lasers**, Department of Mathematics, University of Colorado at Colorado Springs, USA

Oct 2006 ♢ **Self-transform functions and self-transform operators**, Department of Applied Mathematics, University of Colorado at Boulder, USA

Jun 2006 ♢ **Modeling of modern lightwave systems**, Department of Applied Mathematics, University of Colorado at Boulder, USA

Apr 2006 ♢ **Modeling of modern lightwave systems: The mathematical story of the optical fiber**, Department of Applied Mathematics, University of Crete, Greece

Nov 2004 ♢ **Nonlinear pulse propagation in optical fibers: Soliton perturbation theory**, Department of Engineering Sciences and Applied Mathematics, Northwestern University, USA

Nov 2003 ♢ **Soliton radiation in optical fibers**, Department of Mathematics, University of the Aegean, Greece

Jun 2000 ♢ **Soliton radiation in optical fibers**, Department of Mathematics, Imperial College, UK

Mar 1999 ♢ **A new method for solving linear PDEs**, Department of Mathematics, Imperial College, UK

Talks / Articles of General Interest

Oct 2024 ♢ **Ride the Wave, Go with the Flow**. Interdepartmental / Interdisciplinary Seminar of the School of Sciences, University of Ioannina. Seminar given to the undergraduate students of the School of Sciences.

Editorial ♢ **Solitons, dispersive shock waves and Noel Frederick Smyth**, Wave Motion **127**, 103275, 2024. Special issue in memory of N.F. Smyth.

Dec 2016 ♢ **Forty-something waves**. Department of Mathematics and Applied Mathematics, University of Crete, Greece. Seminar given to the students of the Department.

Mar 2016 ♢ **Forty-something waves**. Department of Mathematics, University of Ioannina, Greece. Seminar given to a general audience.

Editorial ♢ **Rogue waves: Extreme waves of water and light**, J. Appl. Computat. Math. **3**, e137 (3 pages) 2014.

Editorial ♢ **Solitons in mode-locked lasers**, J. Appl. Computat. Math. **1**, e124 (2 pages) 2012.

May 2010 ♢ **It is a nonlinear waves world: From beaches to lasers** (Poster). Department of Applied Mathematics, University of Colorado at Boulder, USA

June 2008 ♢ **An immersed interface method for modeling semiconductor devices** (Poster). Department of Applied Mathematics, University of Colorado at Boulder, USA

Apr 2008 ♢ **Solitons: The lonely waves**. Department of Applied Mathematics, University of Colorado at Boulder, USA. Seminar given to the graduate students of the Department.

May 2006 ♢ **Calculus: The lost art of common sense**. Communications Residential College, Northwestern University, USA

Mar / Apr 2001 ♢ **Faster fibres ease communications**. British Commercial News. A version of this article has been translated and published in Italy, India and Korea.

Editorial Services

Editorial Board
- Wave Motion (Guest Editor); Physica Scripta (Advisory Panel); The Open Optics Journal; Open Optics Reviews; Journal of Applied and Computational Mathematics.

Reviewer
- Applied and Computational Mathematics; Applied Numerical Mathematics; Canadian Journal of Physics; Chaos; Chaos, Solitons & Fractals; Chinese Optics Letters; Communications in Nonlinear Science and Numerical Simulation; Communications in Computational Physics; Discrete and Continuous Dynamical Systems S; European Physics Letters; Heliyon; IEEE Access; IEEE Journal of Quantum Electronics; IEEE Photonics Journal; IMA Journal of Applied Mathematics; Journal of Applied Analysis; Journal of Electromagnetic Waves and Applications; Journal of Mathematical Physics; Journal of Optics; Journal of Physics A: Mathematical and Theoretical; Journal of the Optical Society of America B; Mathematical Methods in the Applied Sciences; Modeling and Simulation in Materials Science and Engineering; Nonlinear Dynamics; Nonlinearity; Ocean and Coastal Management; Optics Communications; Optics Express; Optics and Laser Technology; Optics Letters; Physica A; Physica D; Physica Scripta; Physics Letters A; Photonics; Results in Optics; Results in Physics; The European Physical Journal Plus; Progress in Electromagnetic Research; Scientific Reports.

Grants Reviewer
- Engineering and Physical Sciences Research Council (EPSRC); National Science Foundation (NSF); State Scholarships Foundation (IKY); Hellenic Foundation for Research and Innovation (HFRI).

Books and Book Chapters

Books

1. T.P. Horikis, Translation Editor of *Calculus* by W.L. Briggs, L. Cochran, B. Gillett, Pearson Education, 2015. Translated and published by Kritiki Publishing, 2018.
2. P. Kanti, T.P. Horikis, Translation Editors of *Classical Dynamics of Particles and Systems* by S.T. Thornton, J.B. Marion, Cengage Learning, 2003. Translated and published by Gutenberg Publishing, 2020.

Book Chapters

1. T.P. Horikis, D.J. Frantzeskakis, *Perturbation theories for solitons in optical fibers*, in *Handbook of Optical Fibers*, Springer, 2018.
2. T.P. Horikis, D.J. Frantzeskakis, *On the properties of a nonlocal nonlinear Schrödinger model and its soliton solutions*, in *Handbook of Nonlinear Analysis*, Springer, 2018.
3. S.K. Ntouyas, B. Ahmad, T.P. Horikis, *Recent developments of Lyapunov-type inequalities for fractional differential equations*, in *Handbook of Differential Inequalities*, Springer, 2019.
4. G.N. Koutsokostas, T.P. Horikis, D.J. Frantzeskakis, N. Antar, I. Bakirtas, *Water waves and light: Two unlikely partners*, in *Nonlinear Optics - From Solitons to Similaritons*, IntechOpen, 2021.
5. T.P. Horikis, N.I. Karachalios, D.J. Frantzeskakis, *Dynamics of a higher-order Ginzburg–Landau-type equation*, in *Nonlinear Analysis, Differential Equations and Applications*, Springer, 2021.
6. M. Bagcı, T.P. Horikis, I. Bakırtas, N. Antar, *Lattice solitons in a nonlocal nonlinear medium with self-focusing and self-defocusing quintic nonlinearity*, IntechOpen, 2022.

Publications

1. T.P. Horikis, J.N. Elgin, *Soliton radiation in an optical fiber*, J. Opt. Soc. Am. B **18**, 913-918, 2001.

2. J.N. Elgin, T.P. Horikis, *Dispersive perturbations of optical solitons*, Phys. Rev. E **64**, 047602 (2 pages), 2001.

3. T.P. Horikis, J.N. Elgin, *Solitons in fibers with polarization mode dispersion*, Opt. Lett. **27**, 1516-1518, 2002.

4. T.P. Horikis, J.N. Elgin, *Perturbed solitons in birefringent fibers*, J. Phys. A: Math. Gen. **36**, 4841-4848, 2003.

5. T.P. Horikis, J.N. Elgin, *Nonlinear optics in a birefringent optical fiber*, Phys. Rev. E **69**, 016603 (11 pages), 2004.

6. T.P. Horikis, M.S. McCallum, *Self-Fourier functions and self-Fourier operators*, J. Opt. Soc. Am. A **23**, 829-834, 2006.

7. M.S. McCallum, T.P. Horikis, *Self-transform operators*, J. Phys. A: Math. Gen. **39**, L395-L400, 2006.

8. T.P. Horikis, *Eigenstate calculation of arbitrary quantum structures*, Phys. Lett. A **359**, 345-348, 2006.

9. T.P. Horikis, W.L. Kath, *Modal analysis of circular Bragg fibers with arbitrary index profiles*, Opt. Lett **31**, 3417-3419, 2006.

10. T.P. Horikis, *Fractal self-transform functions*, J. Opt. Soc. Am. A **24**, 253-254, 2007.

11. M.J. Ablowitz, T.P. Horikis, B. Ilan, *Solitons in dispersion-managed mode-locked lasers*, Phys. Rev. A **77**, 033814 (5 pages), 2008.

12. M.J. Ablowitz, T.P. Horikis, *Pulse dynamics and solitons in mode-locked lasers*, Phys. Rev. A (Rapid Communications) **78**, 011802 (4 pages), 2008.

13. M.J. Ablowitz, T.P. Horikis, S.D. Nixon, Y. Zhu, *Asymptotic analysis of pulse dynamics in mode-locked lasers*, Stud. Appl. Math. **122**, 411-425, 2009.

14. D.J. Costinett, T.P. Horikis, *High-order eigenstate calculation of arbitrary quantum structures*, J. Phys. A: Math. Theor. **42**, 235201 (16 pages), 2009.

15. M.J. Ablowitz, T.P. Horikis, *Solitons and spectral renormalization methods in nonlinear optics*, Eur. Phys. J. Special Topics **173**, 147-166, 2009.

16. M.J. Ablowitz, T.P. Horikis, *Solitons in normally dispersive mode-locked lasers*, Phys. Rev. A **79**, 063845 (8 pages), 2009.

17. M.J. Ablowitz, T.P. Horikis, S.D. Nixon, *Soliton strings and interactions in mode-locked lasers*, Opt. Comm. **282**, 4127-4135, 2009.

18. T.P. Horikis, *The short-pulse equation and associated constraints*, J. Phys. A: Math. Theor. **42**, 442004 (5 pages), 2009.

19. T.P. Horikis, H.E. Nistazakis, *Dynamical oscillations in nonlinear optical media*, Opt. Comm. **283**, 1467-1470, 2010.

20. N.L. Tsitsas, T.P. Horikis, P.G. Kevrekidis, D.J. Frantzeskakis, *Short pulse equations and localized structures in frequency band gaps of nonlinear metamaterials*, Phys. Lett. A **374**, 1384-1388, 2010.

21. S.P. Cockburn, H.E. Nistazakis, T.P. Horikis, P.G. Kevrekidis, N.P. Proukakis, D.J. Frantzeskakis, *Matter-wave dark solitons: Stochastic versus analytical results*, Phys. Rev. Lett. **104**, 174101 (4 pages), 2010.

22. M.J. Ablowitz, T.P. Horikis, *Nonlinear waves in optical media*, J. Comput. Appl. Math. **234**, 1896-1903, 2010.

23. C. Wang, P.G. Kevrekidis, T.P. Horikis, D.J. Frantzeskakis, *Collisional inhomogeneity induced generation of matter-wave dark solitons*, Phys. Lett. A **374**, 3863-3868, 2010.

24. M.J. Ablowitz, T.S. Haut, T.P. Horikis, S.D. Nixon, Y. Zhu, *Nonlinear wave dynamics: from lasers to fluids*, Discret. Contin. Dyn. Systems-S **4**, 923-955, 2011.

25. M.J. Ablowitz, T.P. Horikis, S.D. Nixon, D.J. Frantzeskakis, *Dark solitons in mode-locked lasers*, Opt. Lett. **36**, 793-795, 2011.

26. T.P. Horikis, *Analysis of optical waveguides with arbitrary index profile using an immersed interface method*, Int. Journal Mod. Phys. C **22**, 687-710, 2011.

27. M.J. Ablowitz, S.D. Nixon, T.P. Horikis, D.J. Frantzeskakis, *Perturbations of dark solitons*, Proc. Royal Soc. A **467**, 2597-2621, 2011.

28. S.P. Cockburn, H.E. Nistazakis, T.P. Horikis, P.G. Kevrekidis, N.P. Proukakis, D.J. Frantzeskakis, *Fluctuating and dissipative dynamics of dark solitons in quasi-condensates*, Phys. Rev. A **84**, 043640 (16 pages), 2011.

29. V.A. Achilleos, T.P. Horikis, G. Theocharis, P.G. Kevrekidis, D.J. Frantzeskakis, *Excited Bose-Einstein condensates: Quadrupole oscillations and dark solitons*, Math. Comput. Simulat. **82**, 946–957, 2012.

30. T.P. Horikis, *Dielectric waveguides of arbitrary cross sectional shape*, Appl. Math. Model. **37**, 5080-5091, 2013.

31. M.J. Ablowitz, S.D. Nixon, T.P. Horikis, D.J. Frantzeskakis, *Dark solitons of the power-energy saturation model: application to mode-locked lasers*, J. Phys. A: Math. Theor. **46**, 095201 (18 pages), 2013.

32. T.P. Horikis, D.J. Frantzeskakis, *Dark solitons in the presence of higher-order effects*, Opt. Lett. **38**, 5098-5101, 2013.

33. T.P. Horikis, D.J. Frantzeskakis, *On the NLS to KDV connection*, Rom. Journ. Phys. **59**, 195-203, 2014.

34. Y. Shen, T.P. Horikis, P.G. Kevrekidis and D.J. Frantzeskakis, *Traveling waves of the regularized short pulse equation*, J. Phys. A: Math. Theor. **47**, 315204 (15 pages), 2014.

35. T.P. Horikis, M.J. Ablowitz, *Passive mode-locking under higher order effects*, J. Opt. Soc, Am. B **31**, 2748-2753, 2014.

36. M.J. Ablowitz, T.P. Horikis, *Interacting nonlinear wave envelopes and rogue wave formation in deep water*, Phys. Fluids **27**, 012107 (10 pages), 2015.

37. T.P. Horikis, *Small-amplitude defocusing nematicons*, J. Phys. A: Math. Theor. **48**, 02FT01 (7 pages), 2015.

38. T.P. Horikis, M.J. Ablowitz, *Constructive and destructive perturbations of dark solitons in mode-locked lasers*, J. Opt. **17**, 042001 (5 pages), 2015.

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