Nikos I. Karachalios
Curriculum Vitae

Date of Birth 10 July 1970 (in Vyronas, Athens, Greece).

Affiliation Department of Mathematics, University of Thessaly, Lamia GR 35100, GREECE.

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Education

Degree ("Ptychion"- 4 years B.Sc.) in Mathematics, National and Kapodistrian University of Athens, Greece, 1994.
M. Sc. (with distinction) in the Mathematics of Nonlinear Models University of Edinburgh, Scotland, UK, 1995. (M.Sc. Dissertation Advisor: Dr. Sandro Merino).
Ph. D. in Partial Differential Equations, Division of Mathematics, National Technical University of Athens (ΕΜΠ), Greece, 1999. (Ph.D. Thesis Supervisor: Prof. Nikolaos M. Stavrakakis).

Employment

- Temporary lecturer, National Technical University of Athens, Division of Mathematics (February 2001-June 2001).
- Temporary lecturer, Department of Statistics and Actuarial Science University of the Aegean (September 2001-November 2003).
- Assistant Professor, Department of Mathematics, University of the Aegean (December 2003-February 2008).
- Associate Professor, Department of Mathematics, University of the Aegean (March 2009-January 2014).
- Professor, Department of Mathematics, University of the Aegean (February 2014-April 2021).
- Professor, Department of Mathematics, University of Thessaly (April 2021-).

Experience in Distance Higher Education & Relevant Educational Technologies

Started from 2011, I am continuously serving as an *adjunct faculty member* in Hellenic Open University (HOU), the public academic institute in Greece providing distance education at both undergraduate and postgraduate level. For that purpose, it develops and implements appropriate learning material and methods of teaching. For the academic years 2017-2020, I am serving as a coordinator of the postgraduate course "MSM80 Computational Methods and Software in Mathematics" within the M. Sc. program M. Sc. in Mathematics (https://www.eap.gr/en/postgraduate-studies-in-mathematics/)". See https://www.eap.gr/en/postgraduate-studies-in-mathematics/topics/#m80 , for a short description of the course.
In 2016, I was certified as instructor specialized in distance learning and relevant educational web-platforms.

Research Interests

- Infinite Dimensional Dynamical Systems and Partial Differential Equations.
- Applied Mathematical Analysis.

Publications and h-indices

- 59 refereed publications in international journals (1 invited).

(For the complete list of publications see Section I).

- 1 Book (edited).

Citations

> 450 non-self-citations (source: only ISI Web of Science & Scopus).

List of Collaborators

G. Abbas (Government College University), Z. Anastassi (De Montfort University), J. E. Allen (University of Oxford), V. Achilleos (Université du Maine), A. R. Bishop (Center of Nonlinear Studies, LANL), E. Charalambidis (California Polytechnic State University), J. Cuevas (University of Seville), F. Diakonos (University of Athens), J. C. Eilbeck (Heriot-Watt University, Edinburgh), G. Fotopoulos (Xiamen University), D. J. Frantzeskakis (University of Athens), N. Gialelis (University of Athens), M. Haragus (University of Franche-Comté), D. Hennig (University of Thessaly), T. P. Horikis (University of Ioannina), G. James (Grenoble INP- Ensimag), P. G. Kevrekidis (University of Massachusetts), V. Koukouloyannis (University of the Aegean), Dionyssios Mantzavinos (University of Kansas), A. Lyberopoulos (University of the Aegean), M. Molina (Univeristy of Chile), H. Nistazakis (University of Athens), F. Palmero (University of Seville), B. Sánchez-Rey (University of Seville), Y. Shen (University of Texas, Dallas), N. Stavrakakis (National Technical University of Athens), J. Sullivan (University of Massachusetts), I. G. Stratis (University of Athens), G. Theocharis (Université du Maine), P. Xanthopoulos (Max-Planck Institute, IPP Greifswald), A. Yannacopoulos (Athens University of Economy and Business Science), N. Whitaker (University of Massachusetts), H. Yue (University of Massachusetts), N. Zographopoulos (National Military Academy Evelpidon).

Conference Talks

> 40 talks in conferences, colloquiums and seminars.
(See Section II for details on selected invited talks).

Service to the Community

- Referee > 40 international mathematical journals.
- Member of the Editorial Board for 3 international journals.
- Reviewer in Mathematical Reviews, American Mathematical Society.
- Project evaluator for Hellenic Foundation for Research & Innovation [HFRI (ΕΛΙΔΕΚ)].
- Project evaluator for General Secretariat of Research and Technology (GSRT), Ministry of Development.
- Project evaluator for Israel Science Foundation (ISF).
- Member of the organizing and scientific committee in various conferences and workshops (see section II for selected activities).

Research Funding

1. Project «ΕΔΒΜ34, Support of Researchers with an emphasis to Young Researchers» entitled, *Localized and quasi-periodic solutions of nonlinear partial differential equations: Dynamics routes from mathematical ecology to nonlinear physics*: funded by the General Secretariat of Research and Technology (GSRT), Ministry of Development, (2018). Rank: 29/2649. Grant: 40000 Euros.
2. (9/8/2016-9/8/2019) *Splitting resonator based nonlinear metamaterials: from few to many, theory and experiments*. Program NPRP 9-329-1-067 funded by QNRF (Qatar National Research Fund) Grant: 764.000$. Position: Member of the Main Research Group.
3. (10/2/2016-10/2/2019) *Rogue Waves: From Oceans to Microwaves and Light*. Program NPRP8-764-1-160 funded by QNRF (Qatar National Research Fund) Grant: 810.000$. Position: Member of the Main Research Group.
4. (1/3/2004-31/8/2007) Project of basic research under the title: *Dynamics of Infinite Discrete and Continuous Dimensional Systems and Applications,* NTUA. Funded by the «PYTHAGORAS» project by the Ministry of Education (EPEAEK II). Grant: 80.000 Euros. Position: Member of the Main Research Group.
5. (1/3/2004-31/8/2007) Project of basic research under the title: *Theoretical and Numerical Study of Evolution and Stationary Partial Differential Equations,* University of the Aegean. Funded by the «PYTHAGORAS» project by the Ministry of Education (EPEAEK II). Grant: 80.000 Euros. [Contract Number: 12/1356] Position: Member of the Main Research Group.

6. (1/1/2004-31/12/2005) Project of basic research under the title: C^**-Algebras and Operator Theory.* Funded by the «ΕΠΕΠ 2004» project by the Research Unit of the University of the Aegean. Grant: 8.000 Euros. Position: Member of the Main Research Group.
7. (1/9/2002-31/8/2004) Project of basic research under the title: *Analysis of Nonlinear Elliptic & Evolution Equations and Systems.* Funded by the «THALES» project from the Committee of Fundamental Research of National Technical University of Athens, Greece. Grant: 2.400.000 Drch $\simeq$ 7000 Euros. Position: Research Associate.
8. 1/1/2000-31/9/2001) PENED – 1999 under the title: *Dynamics of Phase Transitions and of the related Transitional Phenomena in Alloys*. Funded by the General Secretariat for Research and Technology (GSRT) Grant: 161000 Euros. [Contract Number: 99ΕΔ527]. Position: Research Associate.

Teaching Experience

- Undergraduate courses [University of the Aegean-University of Thessaly]: Calculus, Ordinary Differential Equations, Partial Differential Equations, Numerical Analysis, Real Analysis and Measure Theory, Functional Analysis, Introductory Physics, Complex Analysis, Classical Mechanics.
- Graduate courses [University of the Aegean]: Applied Mathematical Models, Ordinary Differential Equations and Dynamical Systems, Mathematical Physics, Partial Differential Equations.
- Graduate Course [Hellenic Open University]: Computational Methods and Software in Mathematics.
- Ph. D theses supervised: Sevastos Diamantidis (2017), Konstantinos Vetas (2018).
- M.Sc dissertations supervised: I have supervised 39 M.Sc. dissertations in the Department of Mathematics of the University of the Aegean, and 40 dissertations in Hellenic Open University.
- Undergraduate dissertations supervised: I have supervised 12 undergraduate dissertations in the Department of Mathematics of the University of the Aegean.

Administrative Experience & Duties

- Head of the Department of Mathematics, University of the Aegean (2009-2013).
- Member of the Postgraduate Studies Committee, Department of Mathematics-University of the Aegean (2003-2015).
- Head of the Department of Mathematics, University of Thessaly (2023-2025).

I. List of Publications

A. Book (Edited)

R. Carretero-González, J. Cuevas, D. J. Frantzeskakis, N. I. Karachalios, P. G. Kevrekidis, F. Palmero. (eds.) *Localized Excitations in Nonlinear Complex Systems: Current State of the Art and Future Perspectives.* NONLINEAR SYSTEMS AND COMPLEXITY **7,** Springer, 2014.

B. Refereed Articles

59. N. I. Karachalios, A. Krypotos and P. Kyriazopoulos. *Nonlinear lattices from the physics of ecosystems: The Lefever-Lejeune nonlinear lattice in* $\mathbb{Z}^2$. MATHEMATICAL METHODS IN THE APPLIED SCIENCES (2024), 1-20. https://doi.org/10.1002/mma.10293.

58. G. Fotopoulos, N. I. Karachalios, V. Koukouloyannis, P. Kyriazopoulos and K. Vetas. *The discrete nonlinear Schrödinger equation with linear gain and nonlinear loss: the infinite lattice with nonzero boundary conditions and its finite dimensional approximations.* JOURNAL OF NONLINEAR SCIENCE **34,** article no. 72 (2024) (36pp).

57. E. G. Charalampidis, G. James, Jesús Cuevas-Maraver, D. Hennig, N. I. Karachalios and P. G. Kevrekidis. *Existence, stability and spatio-temporal dynamics of time-quasiperiodic solutions on a finite background in discrete nonlinear Schrödinger models.* WAVE MOTION **128** (2024), Paper No. 103324.
56. Dirk Hennig, Nikos I. Karachalios, Dionyssios Mantzavinos, Jesús Cuevas-Maraver and I. G. Stratis. *On the proximity between the wave dynamics of the integrable focusing nonlinear Schrödinger equation and its non-integrable generalizations.* JOURNAL OF DIFFERENTIAL EQUATIONS **397** (2024), 106-165.
55. Dirk Hennig and Nikos I. Karachalios. *Periodic traveling wave solutions of discrete nonlinear Klein-Gordon lattices.* MATHEMATICAL METHODS IN THE APPLIED SCIENCES **46** (2023), 18400–18419.
54. Dirk Hennig, Nikos I. Karachalios and Jesús Cuevas-Maraver. *Dissipative localised structures for the complex Discrete Ginzburg-Landau equation.* JOURNAL OF NONLINEAR SCIENCE **33,** article no. 51 (2023) (27pp).
53. Dirk Hennig and Nikos I. Karachalios. *Existence of exponentially and superexponentially spatially localised breather solutions for nonlinear Klein-Gordon lattices in* Z^d, $d \geq 1$. PROCEEDINGS OF THE EDINBURGH MATHEMATICAL SOCIETY **65** (2022), no. 2, 480–499.
52. Dirk Hennig, Nikos I. Karachalios and Jesús Cuevas-Maraver. *The closeness of localised structures between the Ablowitz-Ladik lattice and Discrete Nonlinear Schrödinger equations: Generalised AL and DNLS systems.* JOURNAL OF MATHEMATICAL PHYSICS **63** (2022), no.4, 042701, (18pp).
51. Dirk Hennig, Nikos I. Karachalios and Jesús Cuevas-Maraver. *The closeness of the Ablowitz-Ladik lattice to the Discrete Nonlinear Schrödinger equation.* JOURNAL OF DIFFERENTIAL EQUATIONS 316 (2022) 346–363.
50. Dirk Hennig and Nikos I. Karachalios. *Note added to proof and corrigendum to ``Dynamics of nonlocal and local discrete Ginzburg-Landau equations: global attractors and their congruence''* [Nonlinear Anal. 215 (2022), Paper No. 112647]. NONLINEAR ANALYSIS 218 (2022), Paper No. 112808, 4 pp. [With a new result for the critical damping case of the nonlocal discrete Ginzburg-Landau equation of paper 49 and a correction for the small damping case].
49. Dirk Hennig and Nikos I. Karachalios. *Dynamics of nonlocal and local discrete Ginzburg-Landau equations: global attractors and their congruence.* NONLINEAR ANALYSIS 215 (2022), Paper No. 112647, 20 pp.
48. Dirk Hennig and Nikos I. Karachalios. *Existence of exponentially spatially localised breather solutionç for lattices of nonlinearly coupled particles: Schauder's fixed point theorem approach.* JOURNAL OF MATHEMATICAL PHYSICS **62** (2021), no. 12, 123506, 12 pp.
47. T. P. Horikis, Nikos I. Karachalios and D. J. Frantzeskakis. *Dynamics of a Higher-Order Ginzburg–Landau-Type Equation.* Nonlinear Analysis, Differential Equations, and Applications, SPRINGER OPTIMIZATION AND ITS APPLICATIONS **173** (2021), 187-207.
46. S. Diamantidis, T. P. Horikis and Nikos I. Karachalios. *Exciting extreme events in the damped and AC-driven NLS equation through plane wave initial conditions.* CHAOS **31** (2021), no. 5, 053103, (20 pp).
45. N. Gialelis, N. I. Karachalios and I. G. Stratis. *Regularity of nonvanishing-at infinity or at the boundary-solutions of the defocusing nonlinear Schrödinger equation.* COMMUNICATIONS IN PARTIAL DIFFERENTIAL EQUATIONS **46** (2021), 233-281 (49pp).
44. G. Abbas, P. G. Kevrekidis, J. E. Allen, V. Koukouloyannis, D. J. Frantzeskakis, and N. I. Karachalios, Propagation of periodic wave trains along the magnetic field in a collision-free plasma. JOURNAL OF PHYSICS A: MATHEMATICAL AND THEORETICAL **53** (2020) no. 42, 425701 (17pp).
43. J. Sullivan, E. G. Charalampidis, J. Cuevas-Maraver, P. G. Kevrekidis and N. I. Karachalios. *Kuznetsov-Ma breather-like solutions in the Salerno model.* EUROPEAN PHYSICAL JOURNAL PLUS **135** (2020) 607, 1-12.
42. J. E. Allen, D. J. Frantzeskakis, N. I. Karachalios, P. G. Kevrekidis and V. Koukouloyannis. *Solitary and Periodic Waves in Collisionless Plasmas: The Adlam-Allen Model Revisited.* PHYSICAL REVIEW E **102** (2020), 013209 (14pp).
41. N. I. Karachalios, P. Kyriazopoulos and K. Vetas. *The Lefever-Lejeune nonlinear lattice: convergence dynamics and the structure of equilibrium states*. PHYSICA D: NONLINEAR PHENOMENA **409** (2020), 132487 (21pp).
40. G. Fotopoulos, N. I. Karachalios, V. Koukouloyannis and K. Vetas. The linearly damped nonlinear Schrödinger equation with localized driving: spatiotemporal decay estimates and the emergence of extreme wave events. ZEITSCHRIFT FÜR ANGEWANDTE MATHEMATIK UND PHYSIK **71**:3 (2020) (23pp).
39. G. Fotopoulos, D. J. Frantzeskakis, N. I. Karachalios, P. G. Kevrekidis, V. Koukouloyannis and K. Vetas. Extreme wave events for a nonlinear Schroedinger equation with linear damping and Gaussian driving. COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION **82** (2020), 105058 (14pp).

38. N. I. Karachalios, P. Kyriazopoulos and K. Vetas. *Excitation of Peregrine-type waveforms from vanishing initial conditions in the presence of periodic forcing.* ZEITSCHRIFT FÜR NATURFORSCHUNG A **75** (2019), 371-382. Editor's choice free access article.

37. G. Fotopoulos, N. I. Karachalios, V. Koukouloyannis and K. Vetas. Collapse dynamics for the discrete nonlinear Schrödinger equation with gain and loss. COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION **72** (2019), 213-231.

36. D. J. Frantzeskakis, N. I. Karachalios, P. G. Kevrekidis, V. Koukouloyannis and K. Vetas. Dynamical transitions between equilibria in a dissipative Klein-Gordon lattice. JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS **472** (2019), 546-576.

35. Z. A. Anastassi, G. Fotopoulos, D. J. Frantzeskakis, T. P. Horikis, N. I. Karachalios, P. G. Kevrekidis, I. G. Stratis and K. Vetas. *Spatiotemporal algebraically localized waveforms for a nonlinear Schrödinger model with gain and loss.* PHYSICA D: NONLINEAR PHENOMENA **355** (2017), 24–33.

34. J. Cuevas-Maraver, P.G. Kevrekidis, D.J. Frantzeskakis, N.I. Karachalios, M. Haragus and G. James. *Floquet Analysis of Kuznetsov--Ma breathers: A Path Towards Spectral Stability of Rogue Waves.* PHYSICAL REVIEW E **96** (2017), 012202 (8pp).

33. V. Achilleos, A. R. Bishop, S. Diamantidis, D. J. Frantzeskakis, T. P. Horikis, N. I. Karachalios and P. G. Kevrekidis. *The dynamical playground of a higher-order cubic Ginzburg-Landau equation: from orbital connections and limit cycles to invariant tori and the onset of chaos.* PHYSICAL REVIEW E **94** (2016), 012210 (10pp).

32. V. Achilleos, S. Diamantidis, D. J. Frantzeskakis, T. P. Horikis, N. I. Karachalios and P. G. Kevrekidis. *Collapse for the higher-order nonlinear Schrödinger equation.* PHYSICA D: NONLINEAR PHENOMENA **316** (2016), 57-68.

31. V. Achilleos, S. Diamantidis, D. J. Frantzeskakis, N. I. Karachalios and P. G. Kevrekidis. *Conservation laws, exact travelling waves and modulation instability for an extended nonlinear Schrödinger equation.* JOURNAL OF PHYSICS A: MATHEMATICAL AND THEORETICAL **48** (2015) no. 35, 355205 (33 pp).

30. H. Yue, M. Molina, P.G. Kevrekidis and N.I. Karachalios. *Self-trapping transition for a nonlinear impurity within a linear chain.* JOURNAL OF MATHEMATICAL PHYSICS **55** (2014), no.10, 102703 (25pp).

29. N.I. Karachalios, B. Sánchez-Rey, P.G. Kevrekidis and Jesús Cuevas. *Breathers for the Discrete Nonlinear Schrödinger equation with nonlinear hopping.* JOURNAL OF NONLINEAR SCIENCE **23** (2013), no. 2, 205-239.

28. V. Achilleos, A. Álvarez, J. Cuevas, D. J. Frantzeskakis, N. I. Karachalios, P. G. Kevrekidis and B. Sánchez-Rey. *Escape Dynamics in the Discrete Repulsive φ^4-Model.* PHYSICA D: NONLINEAR PHENOMENA **244** (2013), no. 1, 1-24.

27. Y. Shen, P. G. Kevrekidis, N. Whitaker, N. I. Karachalios and D. J. Frantzeskakis. *Finite-temperature dynamics of matter-wave dark solitons in linear and periodic potentials: an example of an anti-damped Josephson junction.* PHYSICAL REVIEW A: ATOMIC, MOLECULAR, AND OPTICAL PHYSICS **86** (2012), 033616 (13pp).

26. V. Achilleos, G. Theocharis, P.G. Kevrekidis, N.I. Karachalios, F.K. Diakonos and D.J. Frantzeskakis. *Stationary States of A Nonlinear Schrödinger Lattice with A Harmonic Trap.* JOURNAL OF MATHEMATICAL PHYSICS **52** (2011), no. 9, 092701 (25pp) *.

*Selected for the issue of October 2011, *Virtual Journal of Atomic Quantum Fluids* by the Editorial Committee (W. Ketterle, Markus Greiner and Peter Zoller). https://www.aip.org/news/2009/aps-and-aip-launch-virtual-journal-atomic\

25. Jesús Cuevas, Nikos I. Karachalios and Faustino Palmero. *Energy thresholds for the existence of breather solutions and traveling waves on lattices.* A. A. Pankov and D. E. Pelinovsky (eds.): The mathematics of nonlinear lattices. APPLICABLE ANALYSIS **89** (2010), no. 9, 1351–1385. (Invited Article).

24. Nikos I. Karachalios and Nikos Zographopoulos. *The semiflow of a reaction-diffusion equation with a singular potential.* MANUSCRIPTA MATHEMATICA **130** (2009) no. 1, 63-91.

23. Jesús Cuevas, Nikos I. Karachalios and Faustino Palmero. *Lower and upper estimates on the excitation threshold for breathers in DNLS lattices.* JOURNAL OF MATHEMATICAL PHYSICS **50** (2009), no. 11, 112705 (10 pp).

22. Nikos I. Karachalios. *A remark on the dimension of the attractor for the Dirichlet problem of the complex Ginzburg-Landau equation.* JOURNAL OF MATHEMATICAL PHYSICS **50** (2009), no. 8, 082701 (8pp).

21. Nikos I. Karachalios and Nikos Zographopoulos. *A sharp estimate and change on the dimension of the attractor for singular semilinear parabolic equations.* ARCHIV DER MATHEMATIK **91** (2008) no.6, 564-576.

20. Nikos I. Karachalios. *The number of bound states for a Discrete Schrödinger operator on $Z^N, N \geq 1$- lattices.* JOURNAL OF PHYSICS A: MATHEMATICAL AND THEORETICAL **45** (2008) no. 45, 455201 (14 pp).
19. Jesús Cuevas, Chris Eilbeck and Nikos I. Karachalios. *Thresholds for breather solutions of the Discrete Nonlinear Schrödinger equation with saturable and power nonlinearity.* DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS **A 21** (2008) no.2, 445-475.
18. Jesús Cuevas, Chris Eilbeck and Nikos I. Karachalios. *A lower bound for the power of periodic solutions of the defocusing Discrete Nonlinear Schrödinger equation.* DYNAMICS OF PARTIAL DIFFERENTIAL EQUATIONS **5** (2008) no. 1, 69-85.
17. Nikos I. Karachalios. *Weyl's type estimates on the eigenvalues of critical Schrödinger operators.* LETTERS IN MATHEMATICAL PHYSICS **83** (2008), no. 2, 189-199.
16. Nikos I. Karachalios, Hector Nistazakis and Athanasios Yannacopoulos. *Asymptotic Behavior of Solutions of Complex Discrete Evolution Equations: The Discrete Ginzburg-Landau Equation.* DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS **A** 19 (2007) no. 4, 711-736.
15. Nikos I. Karachalios and Athanasios Lyberopoulos. *On the dynamics of a degenerate damped semilnear wave equation on R^N: The non-compact case.* DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS **A** Special Volume (2007), 531-540.
14. Nikos I. Karachalios. *Global Existence in infinite lattices of nonlinear oscillators: The Discrete Klein-Gordon equation.* GLASGOW MATHEMATICAL JOURNAL **48** (2006) no. 3, 463-482.
13. Nikos I. Karachalios and Athanasios Yannacopoulos. *The existence of a global attractor for the Discrete Nonlinear Schrödinger equation II: Compactness without tail estimates in $Z^N, N \geq 1$-lattices.* PROCEEDINGS SECTION A: MATHEMATICS-ROYAL SOCIETY OF EDINBURGH **137**A (2007), 63-76.
12. Nikos I. Karachalios and Nikos Zographopoulos. *On the dynamics of a degenerate parabolic equation: Global bifurcation of stationary states and convergence.* CALCULUS OF VARIATIONS AND PARTIAL DIFFERENTIAL EQUATIONS **25** (2006), no. 3, 361-393.
11. Nikos I. Karachalios. *A remark on the existence of breather solutions for the Discrete Nonlinear Schrödinger equation: The case of the site dependent anharmonic parameter.* PROCEEDINGS OF THE EDINBURGH MATHEMATICAL SOCIETY **49** (2006), no. 1, 115-129.
10. Nikos I. Karachalios and Athanasios Yannacopoulos. *Global existence and global attractors for the Discrete Nonlinear Schrödinger equation.* JOURNAL OF DIFFERENTIAL EQUATIONS **217** (2005) no. 1, 88-123.
9. Nikos I. Karachalios, Nikos Stavrakakis and Pavlos Xanthopoulos. *Parametric exponential energy decay for dissipative electron-ion plasma waves.* ZEITSCHRIFT FÜR ANGEWANDTE MATHEMATIK UND PHYSIK **56** (2005) no.2, 218-238.
8. Nikos I. Karachalios and Nikos Zographopoulos. *Global attractors and convergence to equilibrium for degenerate Ginzburg-Landau and parabolic equations.* NONLINEAR ANALYSIS 63 (2005), no. 5-7, 1749-1768.
7. Nikos I. Karachalios and Nikos Zographopoulos. *Convergence towards attractors for a degenerate Ginzburg-Landau equation.* ZEITSCHRIFT FÜR ANGEWANDTE MATHEMATIK UND PHYSIK **56** (2005), no. 1, 11-30.
6. Nikos I. Karachalios, Nikos Stavrakakis and Pavlos Xanthopoulos. *Asymptotic behavior of solutions for a semibounded nonmonotone evolution equation.* ABSTRACT AND APPLIED ANALYSIS (2003), no. 9, 521--538.
5. Nikos I. Karachalios and Nikos Stavrakakis. *Estimates on the dimension of a global attractor for a semilinear dissipative wave equation on R^N.* DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS **A 8** (2002), no. 4, 939–951.
4. Nikos I. Karachalios and Nikos Stavrakakis. *Global attractor for the weakly damped driven Schrödinger equation in $H^2(R)$.* NoDEA-NONLINEAR DIFFERENTIAL EQUATIONS AND APPLICATIONS. **9** (2002), no.3, 347-360.
3. Nikos I. Karachalios and Nikos Stavrakakis. *Asymptotic behavior of solutions of some nonlinearly damped wave equations on R^N.* TOPOLOGICAL METHODS IN NONLINEAR ANALYSIS **18** (2001), no. 1, 73—87.
2. Nikos I. Karachalios and Nikos Stavrakakis. Global existence and blow-up results for some nonlinear wave equations on R^N. ADVANCES IN DIFFERENTIAL EQUATIONS **6** (2001), no. 2, 155-174.
1. Nikos I. Karachalios and Nikos Stavrakakis. *Existence of a global attractor for semilinear dissipative wave equations on R^N.* JOURNAL OF DIFFERENTIAL EQUATIONS **157** (1999) no. 1, 183-205.

Databases Links: AMS-Mathematical Reviews, zbMATH (for subscribers to AMS-MR and zbMath).
https://orcid.org/0000-0002-5580-3957

C. Refereed Proceedings

C1. Nikos I. Karachalios, Hector Nistazakis and Athanasios Yannacopoulos. *Remarks on the asymptotic behavior of solutions of complex discrete Ginzburg-Landau equations.* DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS A Supplement Volume (2005), 476-486. Proceedings of the AIMS Fifth Inernational Conference on Dynamical Systems and Differential Equations, June 16-19, 2004, Los Angeles, USA (Prepublication of the results of article 16).

C2. N. I. Karachalios and N. M. Stavrakakis, Functional *Invariant Sets for Hyperbolic Problems on* R^N. International Conference on Differential Equations –Equadiff 99, World Scientific 638-640, Berlin (1999) (Prepublication of the results of articles 1 and 5).

C3. N. I. Karachalios and N. M. Stavrakakis, *Existence and Asymptotic Behavior of Solutions of Hyperbolic Problems on* R^N. CEREMATH, Dept. of Mathematics, Université Toulouse I, France, (1997), 1-10. (Prepublication of the results of article 2).

C4. N. I. Karachalios and N. M. Stavrakakis, Hyperbolic *Problems on all of* R^N*: Global Existence and Blow-up Results.* CEREMATH, Dept. of Mathematics, Université Toulouse I, France, (1998), 12-23. (Prepublication of the results of article 3).

D. Proceedings

D1. N. I. Karachalios, Hector E. Nistazakis and A. N. Yannacopoulos. *Existence and longtime behavior of localized solutions of Complex Discrete Ginzburg-Landau equations.* Proceedings of the 10th Pan-Hellenic Conference on Mathematical Analysis.

D2. N. I. Karachalios. *Global Attractor for the Nonlinear, Weakly Damped Schroedinger Equation in* $H^2(R)$. Proceedings of the International Conference in Mathematical Analysis, in Memoriam of C. Papakyriakopoulos, NTUA University Press, 183-192, 2002.

D3. N. I. Karachalios and N. M. Stavrakakis. *Global Attractors for nonlinear hyperbolic equations in unbounded domains.* Special Volume in honor of Professor J. Mittas, Aristotle University of Thessaloniki University Press, 191-216, 2000.

D4. N. I. Karachalios and N. M. Stavrakakis. *Asymptotic Behavior of Semilinear Dissipative Wave Equations on* R^N. Proceedings of the 6th Pan-Hellenic Conference on Analysis, Samos, Greece, 105-110, ZHTH Publications 1998.

II. Other professional activities (invited talks-service to the scientific community). Fellowships & awards.

Presentations in Conferences and Colloquia

1. «Asymptotic behaviour of semi-linear wave equations on R^N». 6th Panhellenic Conference of Mathematical Analysis, September 7, 1997, University of the Aegean, Department of Mathematics, Samos, GREECE.
2. «Attractors for semi-linear wave equations ». May 20, 1998, National Technical University of Athens, Division of Mathematics, GREECE.
3. «Existence of Global Attractor for the weakly damped driven Schrödinger equation in $H^2(R)$». International Conference on Mathematical Analysis and its Applications, in memoriam of C. Papakyriakopoulos, August 24, 2000, NTUA, Athens, GREECE
4. «Dynamics of Complex Ginzburg-Landau Equations and damped NLS systems in $H^2(R)$». October 10, 2001, Department of Mathematics, University of the Aegean, GREECE.

5. «Asymptotic Behavior of Solutions of complex discrete evolution equations». June 18, 2004, AIMS 5th International Conference on Dynamical Systems and Differential Equation, Los Angeles, USA (30 min invited talk, invitation by the special session organizers Prof. G. Hetzer & and Prof. W. Shen).
6. «Global attractors and convergence to equilibrium for degenerate Ginzburg-Landau and parabolic equations». 4th World Congress of Nonlinear Analysis WCNA, July 3, 2004, Orlando, Florida, USA (45 min invited talk, invitation by the special session organizer Prof. M. Nakao).
7. «A nonlinear dispersive equation, describing the dynamics of vortex filaments». Department of Mathematics, University of Missouri, Columbia, USA, July 14, 2004. Invited Miller Scholar presentation.
8. «Existence and long-time behavior of localized solutions, of Complex Discrete Ginzburg-Landau equations». October 2, 2004, 10th Panhellenic Conference of Mathematical Analysis, National Technical University of Athens, GREECE
9. «On the dynamics of a degenerate semi-linear wave equation: The non compact case». AIMS 6th International Conference on Dynamical Systems and Differential Equation, June 25, 2006, Poitiers, FRANCE.
10. «Differential Operators and Logarithmic Sobolev inequalities». Series of ten presented lectures, Analysis Seminar, Department of Mathematics of the University of the Aegean, GREECE. Academic year 2005-2006.
11. «Improved estimates on the Hausdorff dimension of global attractors». 12th Panhellenic Conference of Mathematical Analysis, May 16, 2008, National and Kapodistrian University of Athens, GREECE.
12. «Lower bounds for the power of periodic solutions for the discrete nonlinear Schrödinger equation». 12th Panhellenic Conference of Mathematical Analysis, May 16, 2008, National and Kapodistrian University of Athens, GREECE.
13. «Thresholds for breather Solutions of the Discrete Nonlinear Schrödinger Equation with saturable and power nonlinearity». 21 July, SIAM 2008 Conference on Nonlinear Waves and Coherent Structures, 21-25 July, Universitá di Roma «La Sapienza» Rome, ITALY.
14. «The eigenvalue problem for the discrete Schrödinger operator». Division of Mathematics, Polytechnic School of the Aristotle University of Thessaloniki, March 4, 2009, GREECE
15. «Saddle solutions for the bistable elliptic equation in the plane». Series of 3 lectures in the «Seminar for Applied Analysis and Differential Equations»(Invitation by the Seminar Organizer Prof. Nicholas Alikakos). March 27, May 22, June 12, 2009, GREECE.
16. «Energy thresholds for breathers and traveling waves on lattices». Localized excitations in Nonlinear Complex systems, July 24-27, 2009, University of Sevilla, SPAIN (Invited presentation by the Nonlinear Physics Group, University of Sevilla).
17. «Existence Results and Finite Difference Equations for the Hirota Equation». 8th AIMS Conference on Dynamical Systems Differential Equations and Applications, May 25-28, 2010, Dresden GERMANY (Invited presentation by the session organizers Prof. R. Carretero and Prof. P. G. Kevrekidis).
18. «Lattice Dynamical Systems» (Plenary talk). 3Days for Mathematical Analysis, November 26-28, 2010, Department of Mathematics, National and Kapodistrian University of Athens, GREECE. http://users.uoa.gr/~apgiannop/Analysis_2010/
19. «Energy thresholds for breathers and bifurcation of nonlinear states in lattices» (Plenary presentation), Nonlinear Waves and Solitons in Lattices-In honour of Chris Eilbeck on his retirement, ICMS, Edinburgh, 4-5 April 2011, UK.
http://karan.users.uth.gr/wp-content/uploads/2023/07/ChrisEilbeckMeeting2011.pdf
20. «Escape, blow-up and infinite dimensional dynamics in nonlinear lattices: The Discrete Klein-Gordon equation against the Discrete Nonlinear Schrödinger equation» (Plenary presentation). Interdisciplinary workshop on Quantum Mechanics and Dynamical Systems. Granada, October 8-10, 2011, SPAIN.

21. «Dynamics of Nonlinear lattices: Analysis from their linear limit» (Invited presentation). Nonlinear Physics Group, University of Seville, October 13, 2011, SPAIN.
22. «Nonlinear dispersive equations associated with the motion of curves in R^3». World Congress of Nonlinear Analysts WCNA 2012, National and Kapodistrian University of Athens, GREECE, June 25, 2012.
23. «Escape Dynamics in the Discrete Repulsive φ^4-Model». 2nd Conference on Localized excitations in Nonlinear Complex systems, 9-12 July 2012 (LENCOS' 12), University of Seville, SPAIN, 9 July 2012.
24. «Conservation laws, exact travelling waves and modulation instability for an extended Nonlinear Schrödinger equation». Swedish-Hellenic Workshop on Mathematical Methods in Complex Media Electromagnetics and Related Topics. November 13-14, 2013, National and Kapodistrian University of Athens, GREECE.
25. «Energy thresholds for the existence of breathers and the escape problem on lattices». Department of Mathematics, University of Ioannina, Πανεπιστήμιο Ιωαννίνων, February 11, 2014, GREECE.
26. «Space-time decay estimates for the damped and forced NLS equation». Analysis and Applications of Localized Structures in Nonlinear Media. Lorentz Center, The Netherlands, 29 August-2 September 2016. (Invited Talk), THE NETHERLANDS.
27. «Mechanisms for the emergence of extreme wave events». Mathematical Analysis Symposium, December 9–10, 2016, Department of Mathematics, University of the Aegean, Samos, GREECE.
28. «Analysis of the Hirota Equation». Department of Mathematics, University of Patras, April 28, 2017, GREECE.
29. «Extreme wave events in non-integrable NLS models». Department of Mathematics, Statistics and Physics, Qatar University, May 28, 2018, QATAR.
30. «The dynamics of convergence in nonlinear lattices». «Research Directions in Applied Mathematics». Laboratory of Applied Mathematics, School of Sciences, Hellenic Open University, Patras, February 10, 2019, GREECE.
31. «The discrete Lefever-Lejeune equation: Convergence dynamics and the structure of equilibrium states», September 10, 2019. Mathematical Biology on the Mediterranean Conference September 1-14, 2019, University of the Aegean, Samos, GREECE.
32. «Extreme wave events in damped discrete and continuous NLS equations». Department of Mathematics, University of Ioannina, November 20, 2019, GREECE.
33. «Travelling Waves on Lattices and applications to protein folding». 2021 School in Mathematical Biology: Mathematical Modelling of infectious and non-infectious diseases. Hellenic Open University, September 9-12, 2021, GREECE.
34. «Analysis for nonlinear lattice dynamical systems: Existence of localized solutions and dynamics of dissipative systems». University of Kansas, Department of Mathematics, March 22, 2022, USA.

- Research results concerning the structural stability of the Ablowitz-Ladik lattice and of the fully integrable nonlinear Schrödinger equation, were presented in the following conferences and workshops 35-38:

35. Hybrid Workshop on Nonlinear Waves on the occasion of Dimitris Frantzeskakis' 60th birthday, 15-16 June 2022, National and Kapoditrian University of Athens, GREECE. http://karan.users.uth.gr/wp-content/uploads/2023/07/ad63612bb5.jpg
36. 2nd Congress of Greek Mathematicians SCGM-2022, July 4-8, 2022, Athens, GREECE. http://www.hms.gr/fcgm2022/index.html
http://karan.users.uth.gr/wp-content/uploads/2023/07/diffeqs_program.pdf
37. Workshop on Coherent Structures: Current Developments and Future Challenges, Lorentz Center, July 4-8, 2022, Leiden, THE NETHERLANDS.
https://www.lorentzcenter.nl/coherent-structures-current-developments-and-future-challenges.html
38. Nonlinear Waves and Coherent Structures Conference, SIAM NWCS22, August 30-September 2, 2022, University of Bremen, GERMANY.
https://meetings.siam.org/sess/dsp_programsess.cfm?SESSIONCODE=74308

39. «Nonlinear lattices from the physics of ecosystems». Partial Differential Equations in Applied Mathematics: a hybrid conference in honour of Ioannis Stratis, July 4-5, 2023, National and Kapodistrian University of Athens, GREECE. https://conferences.uoa.gr/event/57/

Schools attended

1. First School on Nonlinear Functional Analysis and Applications to Differential Equations, International Centre for Theoretical Physics (ICTP), Miramare, Trieste, April 15-May 3, 1996, ITALY.
2. Second School on Nonlinear Functional Analysis and Applications to Differential Equations International Centre for Theoretical Physics (ICTP), Miramare, Trieste, Italy, April 21-May 9, 1997.

Member of the Scientific & Organizing Committee in conferences

- Member of the Organizing Committee: *School in Geometric Analysis.* Organized by the Department of Mathematics-University of the Aegean and the National University of Ireland Maynooth. Karlovassi, Samos, Greece, May 31-June 5, 2010.
- Member of the Organizing Committee: *Harmonic Analysis in Samos.* Organized by the Department of Mathematics-University of the Aegean and the Department of Mathematics of the Aristotle University of Thessaloniki. Karlovassi, Samos, Greece, September 22-25, 2009.
- Member of the Organizing Committee: *Dynamics in Samos 2010 - Workshop on Differential Equations, Dynamical Systems and Applications.* Organized by the Department of Mathematics-University of the Aegean and the Division of Mathematics of the School of Applied Mathematics and Physical Sciences of the National Technical University of Athens. Karlovassi, Samos, Greece, August 31-September 3, 2010. https://myria.math.aegean.gr/conferences/dys2010/
- Member of the Scientific Committee: 2nd Conference on Localized excitations in Nonlinear Complex systems, 9-12 July 2012 (LENCOS' 12), University of Seville, Spain.
- Member of the Scientific Committee: Modern Mathematical Methods in Science and Technology (M3ST 2012), organized by the Department of Mathematics, University of Athens. Kalamata, Greece, August 26 – August 28, 2012.
- Member of the Scientific Committee: Modern Mathematical Methods in Science and Technology (M3ST 2015), organized by the Department of Mathematics, University of Athens. Kalamata, Greece, August 30 – September 1, 2015.

Editorial Activities

- Member of the Editorial Board: **Heliyon: Section Mathematics** (Heliyon SJR Quartile: Q1, Interdisciplinary, Impact Factor 4). **Open Physics** (SJR Quartile: Q3, Physics and Astronomy, Impact Factor 1.9). **Arabian Journal of Mathematics** (SJR Quartile: Q3, Mathematics, Impact Factor: 1.2).

Refereeing Services

- *AIMS-Mathematics, Annales Polonici Mathematici, Applied Mathematics Letters, Applicable Analysis, Asymptotic Analysis, Boundary Value Problems, Chaos, Chaos Solitons and Fractals, Communications in Nonlinear Science and Numerical Simulations, Complexity, Chinese Journal of Physics, Communications in Pure and Applied Analysis, Discrete and Continuous Dynamical Systems-Series A, Discrete and Continuous Dynamical Systems-Series S, Electronic Journal of Differential Equations, European Physical Journal, Glasgow Mathematical Journal, Israel Journal of Mathematics, Journal of Applied Mathematics, Journal of Computational and Applied Mathematics, Journal of Differential Equations, Journal of Dynamics and Differential Equations, Journal of Evolution Equations, Journal of Mathematical Analysis and Applications, Journal of Physics A: Mathematical and Theoretical, Journal of Mathematical Physics, Journal of Nonlinear Evolution Equations, Letters*

in Mathematical Physics, Mathematische Nachrichten, Mathematical Methods in the Applied Sciences, Mathematics and Mechanics of Solids, Mathematics and Computers in Simulations, Nonlinear Analysis: Theory, Methods, Applications, Nonlinear Analysis: Series B, Nonlinear Differential Equations and Applications (NoDEA), Nonlinearity, Nonlinear Dynamics, Numerical Methods in Partial Differential Equations, Physics Letters A, Physica D, Results in Mathematics, Proceedings of the Royal Society of Edinburgh-Section A: Mathematics, Royal Society of London: Proceedings A, Studies in Applied Mathematics, Zeitschrift für Angewandte Mathematik und Physik, Zeitschrift für Naturforschung A.

- *Special Volume Degenerate and Singular Parabolic and Elliptic Equations (C. V. Pao and W. Ruan, eds.), International Journal of Dynamical Systems and Differential Equations.*
- Reviewer: Mathematical Reviews-American Mathematical Society, ZB Math.

Fellowships & Awards

- Miller Scholarship, Department of Mathematics, University of Missouri-Columbia, 2004.
- IKY (National Scholarship Foundation) Postdoctoral Fellow (Contract Number: 349), 2001-2002.
- Award *Thomaidi* –National Technical University of Athens, for excellence in Postgraduate Studies, 1999.
- *Papakyriakopoulos* Postgraduate Scholarship, National Technical University of Athens (1995-1999).
- Distinction, *M. Sc. in the Mathematics of Nonlinear Models*-University of Edinburgh (for being 1st in the class of 1994-1995).