

Konstantinos Kalimeris

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Research interests

Asymptotic Analysis, Differential Equations, Mathematical Modelling, Fluid Mechanics, Integrable systems, Complex Analysis, Inverse Problems, Mathematical Imaging.

Academic appointments

- 07/2024 – Present: Researcher, Grade B, at the **Academy of Athens**, Mathematics Research Center, MaRC
- 05/2020 – 07/2024: Researcher, Grade C, at the **Academy of Athens**, Mathematics Research Center, MaRC
- 01/2023 – 07/2025: Member of the Collaborating Teaching Staff, **Hellenic Open University**
- 10/2026 – 07/2027: Lecturer as a member of the Collaborating Teaching Staff, **Hellenic Open University**
- 11/2017 – 02/2020: Research Associate at **University of Cambridge**, Department of Applied Mathematics and Theoretical Physics
- 05/2015 – 10/2017: Senior Scientist at the **Austrian Academy of Sciences**, Johann Radon Institute for Computational and Applied Mathematics, RICAM
- 04/2016 – 07/2016: Substitute Assistant Professor, **University of Salzburg**, Department of Mathematics
- 10/2011 – 04/2015: Research Scientist at the **Austrian Academy of Sciences**, Johann Radon Institute for Computational and Applied Mathematics, RICAM
- 09/2010 – 09/2011: Postdoctoral Researcher at **Université Denis Diderot Paris 7**, Laboratoire de Probabilités et Modèles Aléatoires
- 06/2009 – 06/2010: Postdoctoral Researcher at **École Polytechnique**, Centre de Mathématiques Appliquées

Education

- 2018: **University of Vienna**, Habilitation in Mathematics. Thesis: “Asymptotic methods on fluid dynamics and certain biomedical problems”.
- 2005–2009: **University of Cambridge**, DAMTP, PhD. Thesis: “Initial and boundary value problems in two and three dimensions”. Supervisor: A. S. Fokas.
- 2001–2005: **University of Patras**, degree in Mathematics, 9.91/10; ranked first on admission and graduated first in his cohort. Diploma thesis: the Dirichlet problem for the Laplace equation on a square via the Fokas transform method.

Research grants and projects

- **Principal Investigator.** 2024-2025: The unified transform method for solving PDEs. (Funding by the Sectoral Development Program (SDP 5223471) of the Ministry of Education, Religious Affairs and Sports, through the National Development Program (NDP) 2021-25)
- **Principal Investigator.** 2021-2023: The unified transform method for solving PDEs. (Funding by the Research Committee of the Academy of Athens)
- **Principal Investigator.** 2015-2017: Computation of large amplitude water waves (Funding by FWF) P27755-N25
- **Participant.** 2017-2019: Unified transform, imaging and asymptotics (Funding by EPSRC)
- **Participant.** 2019-2020: Pharmacokinetics based on finite absorption time (Funding by EPSRC)

Publications

Peer-reviewed journal articles

1. **K. Kalimeris**, L. Mindrinos and A. Paraskevopoulos, The unified transform for Burgers' equation: Application to unsaturated flow in finite interval, *Mathematics*, 14(13), 2268, 2026. DOI.
2. L. Mindrinos, **K. Kalimeris** and G. Kargas, Enhancement of Glover's equation for non-steady state drainage, *Journal of Hydrology*, 670, 135224, 2026. DOI.
3. T. Özşarı, D. Mantzavinos and **K. Kalimeris**, A new approach for the analysis of evolution partial differential equations on a finite interval, *Journal of the London Mathematical Society*, 114(3), 2026. DOI.
4. **K. Kalimeris** and T. Özşarı, The Fokas method for linear convection-diffusion equation with time-dependent coefficients and its extension to other evolution equations, *Proceedings of the Royal Society A*, 482(2344), 20260242, 2026. DOI.
5. **K. Kalimeris** and L. Mindrinos, Rainfall infiltration: Direct and inverse problems on a linear evolution equation. *Evolution Equations and Control Theory*, 14(6), 1490-1516, 2025.
6. **K. Kalimeris** and L. Mindrinos, An Analytical Solution to the 1D Drainage Problem. *Mathematics*, 13(20), 3279, 2025.
7. **K. Kalimeris**, L. Mindrinos and N. Pallikarakis, Estimating properties of a homogeneous bounded soil using machine learning models. *Communications on Analysis and Computation*, 6, 62-93, 2025.
8. A. Chatziafratis, A. S. Fokas and **K. Kalimeris**, The Fokas method for evolution partial differential equations, *Partial Differential Equations in Applied Mathematics*, 14, 101144, 2025.
9. A. S. Fokas and **K. Kalimeris**, The Saffman-Taylor problem and several sets of remarkable integral identities. *Studies in Applied Mathematics*, 153(3), e12734, 2024.
10. I. Argyrokastritis, **K. Kalimeris** and L. Mindrinos, An analytical solution for vertical infiltration in homogeneous bounded profiles. *European Journal of Soil Science*, 75(4), e13547, 2024.
11. **K. Kalimeris** and L. Mindrinos, Scattering problems for the wave equation in 1D: D'Alembert-type representations and a reconstruction method. *Partial Differential Equations and Applications*, 5(2), 5, 2024.
12. **K. Kalimeris**, T. Özşarı and N. Dikaios, Numerical computation of Neumann controls for the heat equation on a finite interval, *IEEE Transactions on Automatic Control*, 69(1), 161-173, 2024.

13. T. Özşarı and **K. Kalimeris**, Existence of unattainable states for Schrödinger type flows on the half-line, *IMA Journal of Mathematical Control and Information*, 40(4), 789-803, 2023.
14. A. S. Fokas and **K. Kalimeris**, Extensions of the d'Alembert formulae to the half line and the finite interval obtained via the unified transform, *The IMA Journal of Applied Mathematics*, 87(6), 1010-1042, 2022.
15. T. Özşarı, K. Alkan and **K. Kalimeris**, Dispersion estimates for the boundary integral operator associated with the fourth order Schrödinger equation posed on the half line, *Mathematical Inequalities and Applications*, 25(2), 551-571, 2022.
16. **K. Kalimeris** and A. S. Fokas, The Modified Helmholtz Equation on a Regular Hexagon —The Symmetric Dirichlet Problem, *Axioms*, 9(3), 89, 2020.
17. **K. Kalimeris** and T. Özşarı, An elementary proof of the lack of null controllability for the heat equation on the half line, *Applied Mathematics Letters*, 104, 106241, 2020.
18. **K. Kalimeris** and A. S. Fokas, Explicit asymptotics for certain single and double exponential sums, *Proceedings of the Royal Society of Edinburgh Section A: Mathematics*, 150(2), 607-632, 2020. DOI.
19. **K. Kalimeris** and A. S. Fokas, A novel integral equation for the Riemann zeta function and large t-asymptotics, *Mathematics*, 7(7), 650, 2019.
20. D. Amann and **K. Kalimeris**, Numerical approximation of water waves through a deterministic algorithm, *Journal of Mathematical Fluid Mechanics*, 20(4), 1815-1833, 2018.
21. **K. Kalimeris**, Analytical approximation and numerical simulations for periodic travelling water waves, *Philosophical Transactions of the Royal Society*, 376(2111), 20170093, 2018.
22. D. Amann and **K. Kalimeris**, A numerical continuation approach for computing water waves of large wave height, *European Journal of Mechanics / B Fluids*, 67C, 314-328, 2018.
23. A. S. Fokas and **K. Kalimeris**, Water waves with moving boundaries, *Journal of Fluid Mechanics*, 832, 641-665, 2017.
24. **K. Kalimeris**, Asymptotic expansions of rotational travelling water waves, *Nonlinear Analysis: Real World Applications*, 37, 182-212, 2017.
25. A. Constantin, **K. Kalimeris** and O. Scherzer, Approximations of steady periodic water waves in flows with constant vorticity, *Nonlinear Analysis: Real World Applications*, 25, 276-306, 2015.
26. A. Constantin, **K. Kalimeris** and O. Scherzer, A penalization method for calculating the flow beneath travelling water waves of large amplitude, *SIAM Journal on Applied Mathematics*, 75 (4), 1513-1535, 2015.
27. A. S. Fokas and **K. Kalimeris**, Eigenvalues of the Laplace Operator in the Interior of an Equilateral Triangle, *Computational Methods and Function Theory*, 14 (1), 1-33, 2014.
28. **K. Kalimeris** and O. Scherzer, Photoacoustic Imaging in Attenuating Acoustic Media based on Strongly Causal Models, *Mathematical Methods in The Applied Sciences*, 36(16), 2254-2264, 2013.
29. J. Garnier and **K. Kalimeris**, Inverse scattering perturbation theory for the nonlinear Schrödinger equation with non-vanishing background, *Journal of Physics A: Mathematical and Theoretical*, 45(3), 035202, 2012.
30. H. Ammari, **K. Kalimeris**, H. Kang and H. Lee, Layer potential techniques for the narrow escape problem, *Journal de Mathématiques Pures et Appliquées*, 97(1), 66-84, 2012.
31. **K. Kalimeris**, Explicit Soliton Asymptotics for the Nonlinear Schrödinger Equation on the half-line, *Journal of Nonlinear Mathematical Physics*, 17, 4, 445-452, 2010.

32. **K. Kalimeris** and A. S. Fokas, The Heat Equation in the Interior of an Equilateral Triangle, *Studies in Applied Mathematics*, 124, 3, 283-305, 2010.

Preprints and submitted manuscripts

- **K. Kalimeris** and L. Mindrinos, Estimating parameters of the diffusion model via asymptotic expansions. arXiv:2512.13419, 2025 (submitted).

Book chapters

- A. S. Fokas and **K. Kalimeris**, The Unified Transform Method and the water wave problem, *Nonlinear water waves / An interdisciplinary interface*, 35-52. Birkhäuser, Cham, 2019.
- A. S. Fokas and **K. Kalimeris**, A Novel Non-Local Formulation of Water Waves, *Lectures on the Theory of Water Waves*, Eds T. Bridges, M. Groves and D. Nicholls, Cambridge University Press, 2016.

Peer-reviewed conference proceedings

- **K. Kalimeris** and S. Lycourghiotis, Best-Fitting Ellipsoid and Surface Disturbance Adjustment of GNSS-Derived Sea Surface Heights. *The Eurasia Proceedings of Science, Technology, Engineering and Mathematics*, 38, 323-329. 2025.
- A. S. Fokas, **K. Kalimeris** and J. Lenells, A Novel Difference-Integral Equation Satisfied Asymptotically by the Riemann Zeta Function. In *International Conference on Complex Systems and Applications Network Summer School* (319-332). Cham: Springer International Publishing. 2022
- N. Protonotarios, **K. Kalimeris** and G. Kastis, Fokas on Medical Imaging: Analytic Reconstructions for Emission Tomography. In *International Conference on Complex Systems and Applications Network Summer School* (169-187). Cham: Springer International Publishing. 2022

Teaching material

- **K. Kalimeris** and L. Mindrinos, Partial Differential Equations and Integral Equations. Graduate course: Mathematical Modelling in Natural Sciences, “MSc in Mathematics” at Hellenic Open University, 2025.
- **K. Kalimeris**, Lecture notes for Boundary Value Problems for Linear PDEs, Master’s Course (Part III), University of Cambridge, 2018.

Theses

- Habilitation Thesis: Asymptotic methods on fluid dynamics and certain biomedical problems, University of Vienna, 2018.
- PhD Thesis: Initial and boundary value problems in two and three dimensions, University of Cambridge, 2010.

Teaching experience

- 2026: Advanced undergraduate and graduate course “Solution strategies of Partial Differential Equations”, Nesin Mathematics Village, 31 August-6 September. Co-taught with L. Mindrinos.
- 2026-2027: General Mathematics, Natural Sciences programme (FYE), Hellenic Open University.
- 2023-2025: Graduate course: Mathematical Modelling in Natural Sciences, “MSc in Mathematics” at Hellenic Open University.
- 2022: Graduate minicourse “Pure and Applied Problems of PDEs”, Nesin Mathematical Village, September.
- 2019: Graduate minicourse “Transform Methods for Differential Equations – A unified approach”, Nesin Mathematical Village, September.
- 2018: Graduate course “Boundary Value Problems for Linear PDEs” at University of Cambridge, Michaelmas Term.

- 2018: Graduate minicourse “Transform Methods for Differential Equations – A unified approach”, Nesin Mathematical Village, September.
- 2017: Specialist graduate course “Methods of Complex Analysis for Differential Equation” at University of Vienna, October.
- 2016: Undergraduate course “Linear Algebra II and Geometry” at University of Salzburg, Spring Semester.
- 2007: Undergraduate supervision “Integrable Systems”. University of Cambridge, Lent Term.
- 2004: Lectures for high school students in a program preparing participants for the National Olympiads in Mathematics. Topics included elementary Number Theory, Combinatorics and Euclidean Geometry.

Research supervision

Doctoral supervision

- 2015 – 2022: Dominic Amann, University of Vienna and Austrian Academy of Sciences
- 2025 – present: Konstantinos Giakoumakis, Agricultural University of Athens and Academy of Athens (co-supervised with L. Mindrinos)
- 2025 – present: Athanasios Paraskevopoulos, Agricultural University of Athens and Academy of Athens (co-supervised with L. Mindrinos)

Master’s thesis supervision

- M. Zervopoulou, C. Tsatsos, E. Makri, M.I. Spyropoulos, I. Chondrozoumakis, Hellenic Open University

Doctoral advisory committees

- I. Susuzlu, A. Alkin. Izmir Institute of Technology

Academic visits

- University of Groningen, Faculty of Science and Engineering, June 2026 (1 week)
- University of Vienna, Faculty of Mathematics, June 2026 (1 week)
- University of Groningen, Faculty of Science and Engineering, December 2025 (2 weeks)
- University of Vienna, Faculty of Mathematics, November 2025 (1 week)
- Bilkent University, Department of Mathematics, May 2025 (1 month)
- Princeton University, Department of Mathematics, February-March 2025 (2 months)
- University of Geneva, Department of Mathematics, December 2024 (2 weeks)
- Bilkent University, Department of Mathematics, May 2024 (2 weeks)
- Bilkent University, Department of Mathematics, January 2023 (2 weeks)
- Izmir Institute of Technology, Department of Mathematics, December 2018 (1 week)
- ETH Zurich, Department of Mathematics, June 2018 (1 week)
- ETH Zurich, Department of Mathematics, February 2018 (2 weeks)
- KTH Royal Institute of Technology, Department of Mathematics, January 2018 (1 week)
- Department of Applied Mathematics and Theoretical Physics (DAMTP), University of Cambridge, June 2017 (2 weeks)
- Department of Applied Mathematics and Theoretical Physics (DAMTP), University of Cambridge, November 2016 (2 weeks)
- Department of Applied Mathematics and Theoretical Physics (DAMTP), University of Cambridge, June 2016 (1 week)

- Department of Applied Mathematics and Theoretical Physics (DAMTP), University of Cambridge, January 2016 (1 week)
- Department of Applied Mathematics and Theoretical Physics (DAMTP), University of Cambridge, November 2015 (2 weeks)
- Department of Applied Mathematics and Theoretical Physics (DAMTP), University of Cambridge, February 2015 (2 weeks)
- Department of Mathematics, Inha University, South Korea, December 2009 (2 weeks)

Awards and scholarships

- John S. Latsis Foundation, 2005–2009: scholarship for postgraduate studies abroad.
- EPSRC, 2005–2008: doctoral tuition scholarship.
- Cambridge European Trusts, 2005–2008: doctoral bursary.
- John S. Latsis Foundation, 2002–2005: scholarship for academic excellence during undergraduate studies.
- State Scholarships Foundation (IKY), 2001–2005: scholarships and awards for top academic performance in Mathematics.
- State Scholarships Foundation (IKY), 2001: award for ranking first on admission to the Department of Mathematics.
- Member of the Greek national high-school Physics team, 2001; fifth place in the national competition.
- Reserve member of the Greek national high-school Mathematics team, 2000.
- Three awards for ranking among the top 12 students in the national Mathematics competition, 1999–2001.
- Two bronze medals in the national student Mathematics competition, 1997–1998.

Conference organisation

- Minisymposium in “Analysis and Computation of Water Waves”, in Algorithmy 2016, Slovakia, March 2016.
- Erwin Schrödinger Institute Workshop: Nonlinear water waves - an interdisciplinary interface, Vienna, 4-17 December 2017 (co-organiser).

Scientific talks

A. Invited talks

1. “Integral solutions of evolution equations”, 15th AIMS Conference, Athens, Greece, 6 July 2026.
2. “New solutions and aspects of evolution equations”, 19th PCMA, NTUA, Greece, 19 December 2025
3. “New solutions and aspects of evolution equations”, 18th SFB Meeting, Obergurgl, Austria, 3 December 2025
4. “Aspects of control theory via the unified transform”, BEUN, Zonguldak, Turkey, 2 May 2025
5. “The Fokas method in control theory”, AMS SCS Meeting, Kansas University, USA, 30 March 2025
6. “Dimension as a different perspective in Mathematics”, Arsakeio School seminar, 19 January 2024.
7. “The large t -asymptotics of the Riemann zeta function”, Conference on Dynamical Systems and Complexity, Chania, Crete, 23 July 2022.
8. “Water waves - Two asymptotic approaches”, Izmir Mathematics Days, 12 September 2019.
9. “Asymptotic methods on water waves”, Summer Meeting of Young Researchers in Mathematics, University of Athens, 17 July 2019.

10. “The water wave problem through a non-local formulation”, First Congress of Greek Mathematicians, University of Athens, 26 June 2018.
11. “A non-local formulation for two-dimensional water waves”, Workshop Applied and computational complex analysis, ICMS, Edinburgh, 8 May 2017.
12. “Approaching traveling water waves of large amplitude”, Conference on Dynamical Systems and Complexity, Chalkidiki, 30 August 2016.
13. “Computation of Water Waves Through a Non-Local Formulation”, SIAM 2016, Philadelphia, 9 August 2016.
14. “Asymptotic techniques for Photoacoustic Imaging in attenuating media”, ICIAM’15, CNCC, Beijing, 10 August 2015.
15. “Analytical methods for computing rotational water waves”, IFIP’15, SophiaTech Campus, Sophia-Antipolis, 2 July 2015.
16. “Eigenvalues and eigenfunctions for the Laplace operator”, Conference in Numerical Analysis, Chania, Greece, 2 September 2014.
17. “Large Amplitude Rotational Water Waves”, Inverse Problems: Modelling and Simulation, Fethiye, Turkey, 29 May 2014.
18. “Time reversal methods for Photoacoustic Imaging on Attenuating Media”, Applied Inverse Problem Conference, KAIST, Daejeon, South Korea, 2 July 2013.

B. Contributed talks

1. “The water wave problem through a non-local formulation”, ESI Workshop in Nonlinear water waves - an interdisciplinary interface, Vienna, 6 December 2017.
2. “A non-local formulation of water waves with moving boundaries”, 2nd IMA Conference on Nonlinearity and Coherent Structures, University of East Anglia, 21 June 2017.
3. “Asymptotics on flows beneath travelling water waves”, Workshop nonlinear evolution problems, University of Salzburg, 13 July 2016.
4. “High-order approximations of traveling water waves”, AIMS 2016, Orlando, Florida, 2 July 2016.
5. “An asymptotic technique for computing travelling water waves”, WAVES 2015, KIT, Karlsruhe, 22 July 2015.
6. “Computation of rotational travelling water waves”, Conference on Water wave dynamics, University of Vienna, 1-3 June 2015.
7. “Attenuating models and reconstruction methods in Photoacoustic Imaging”, Theoretical and Applied Computational Inverse Problems, ESI, Vienna, 13 May 2014.
8. “Computation of Water Waves with Constant Vorticity”, Doctoral Program on Dissipation and Dispersion PDEs, Vienna, Austria, 22 January 2014.
9. “Steady Rotational Water Waves”, International Conference on Mathematical Modeling in Physical Sciences, Prague, Czech Republic, 5 September 2013.
10. “Photoacoustic Imaging and Attenuation”, Dissipative Photoacoustic Session, Vienna, 12 June 2012.
11. Workshop on Inverse Problems and Mathematical Imaging, RICAM, January 2012.
12. “Layer Potential Approach to the Narrow Escape Problem”, RICAM, Linz, Austria, May 2011.
13. “A novel approach on solving initial and boundary value problems” at the Seminar on Mathematical Methods in Imaging, Institute Henri Poincaré, April 2010.

C. Invited seminars

1. “Evolution Equations: A new perspective on direct and inverse problems”, General Seminar, Department of Mathematics, University of Athens, 11 June 2026.
2. “The other dimension of mathematics”, Youth University of Kolonos-Metaxourgeoio, Fotagogos, Athens, Greece, 14 February 2026.

3. "A novel method for linear PDEs", Math Seminar at Gebze Technical University, Istanbul, Turkey, 20 May 2024.
4. "Revisiting linear PDEs via the Fokas Method", 29th school - conference on dynamical systems and complexity, NCSR "Demokritos", 21 July 2023.
5. "The Fokas method for linear PDEs", Bilkent Analysis seminar, 14 April 2022.
6. "Revisiting linear PDEs via the unified transform", Computational Science Center seminar, 14 February 2022.
7. "Solving Partial Differential Equations - A unified approach", Hellenic Open University, 27 February 2021.
8. "Asymptotic methods for computing large amplitude water waves", University of Patras, 4 June 2019.
9. "Asymptotic methods on the water wave problem", Izmir Institute of Technology, 11 December 2018.
10. "Asymptotic methods for computing large amplitude water waves", University Bourgogne Franche-Comté, 19 November 2018.
11. "Asymptotic methods on fluid dynamics", University of Vienna, 12 April 2018.
12. "Computation of water-wave profile: An analytical approach", Applied and Computational Analysis Seminar, DAMTP, University of Cambridge, 17 February 2015.
13. "A novel approach on solving initial and boundary value problems", General Seminar, Department of Mathematics in University of Patras, October 2010.

Further conference participation

- Partial Differential Equations in Applied Mathematics: a hybrid conference in honour of Ioannis Stratis, University of Athens, 4-5 July 2023.
- Programme on Nonlinear Water Waves, Isaac Newton Institute, University of Cambridge, 6-10 August 2017.
- Spectral and Analytic Inverse Problems, Institut Henri Poincaré, 4-7 May 2015.
- Photoacoustic Imaging workshop in Biology and Medicine, Obergurgl, Austria, 6-10 March 2014.
- Photoacoustic Imaging workshop in Biology and Medicine, Obergurgl, Austria, 23-27 February 2013.
- Photoacoustic Imaging workshop in Biology and Medicine, Leibniz, Austria, 7-8 May 2012.
- Computational Inverse Problems, Erwin Schrödinger International Institute, Vienna, 23-27 April 2012.
- Photoacoustic Imaging workshop in Biology and Medicine, JKU Linz, Austria, 24-25 October 2011.
- Minicourse on Mathematics of Emerging Biomedical Imaging IV, Institut Henri Poincaré, 24-26 March 2010.
- 8th International Workshop on Mathematical Methods in scattering Theory and Biomedical Engineering in Lefkada, Greece, 27 - 29 September 2007.
- Scattering Theory and Related Problems Symposium in Patras, Greece, 1-2 September 2006.
- International Congress of Mathematicians in Madrid, Spain, 21-31 August 2006.