Curriculum Vitae

Zacharoula Kalogiratou

Zacharoula Kalogiratou is a graduate of the Department of Mathematics of the National and Kapodistrian University of Athens (1987). She holds Master of Science Degree in Numerical Analysis and Computing (1989) and Ph.D. in Numerical Analysis (1992) from the Manchester. She is Professor of mathematics at the Department of Informatics of the University of Western Macedonia.

Her research interests are in the area of Numerical Analysis. She has published 37 research papers and 50 articles in conference proceedings. She has more than 2000 citations and h–index 24 (scopus).

Teaching Experience

2019 – : Department of Informatics, University of Western Macedonia (subjects: Numerical Analysis, Mathematical Analysis).

Department of Mathematics (subjects: Introduction to computer programming, Introduction to Numerical Analysis, Numerical Integration of ODEs).

2019 -: Postgraduate Studies Program in Modern Information Technologies and Services (subject Computational Methods).

2004-2019: Department of Informatics and Computer, Western Macedonia University of Applied Sciences (Kastoria).

1997-2004: Department of International Trade, Western Macedonia University of Applied Sciences (Kastoria).

2008-2012: Hellenic Open University, Mathematics for Informatics.

2000-2002: Department of Engineering and Management of Energy Resources, Aristotle University of Thessaloniki, adjunct faculty (Kozani).

1993-1997: Hellenic Air Force Academy, adjunct faculty (Athens).

1989-1992: University of Manchester teaching assistant.

<div align="center">**Research Activity**</div>

Member of the Editorial Board of Journals:
- ✓ *Applied Mathematics and Computation* (Elsevier Publications)
- ✓ *Journal of Computational Mathematics and Data Science* (Elsevier Publications)
- ✓ *Numerical Analysis and Applicable Mathematics* (Ariviyal Publishing)

Reviewer for several Journals:

- ✓ Computers and Mathematics with Applications (Elsevier)
- ✓ Journal of Computational and Applied Mathematics (Elsevier)
- ✓ Computer Physics Communications (Elsevier)
- ✓ Mediterranean Journal of Mathematics (Springer)
- ✓ Journal of Mathematical Chemistry (Springer)
- ✓ International Journal of Mathematics and Mathematical Sciences (Hindawi)
- ✓ Journal of Applied Mathematics, (Hindawi)
- ✓ Abstract and Applied Analysis, (Hindawi)
- ✓ Mathematical Methods in the Applied Sciences (Wiley)

Member of the Scientific Committee of the conferences

International Conference of Computational Methods in Sciences and Engineering (since 2009).

International Conference on Applied Economics (since 2008).

Articles in Scientific Journals

1. J. Williams, Z. Kalogiratou, Best Chebyshev approximation from families of ordinary differential equations, *IMA Journal Numerical Analysis*, 13 (1993) 383-395.
2. J. Williams, Z. Kalogiratou, Nonlinear Chebyshev fitting from the solution of ordinary differential equations, *Numerical Algorithms*, 5 (1993) 325-337.
3. J. Williams, Z. Kalogiratou, Least squares and Chebyshev fitting for parameter estimation in ODEs, *Advances in Computational Mathematics*, 1(1993) 357-366.
4. Z. Kalogiratou, T.E. Simos, A P-stable Exponentially-Fitted Method for the Numerical Integration of the Schrödinger Equation, *Applied Mathematics and Computation*, 112 (2000) 99-112.
5. *Z. Kalogiratou, T.E. Simos, Construction of trigonometrically and exponentially-fitted Runge-Kutta-Nyström methods – a method of 8th algebraic order, Journal of Mathematical Chemistry,* **31** (2002) 211-232.
6. *Z. Kalogiratou, T.E. Simos, Newton-Cotes Formulae for Long Time Integration, Journal of Computational and Applied Mathematics,* 158 (2003).
7. Z. Kalogiratou, Th. Monovasilis, T.E. Simos, Symplectic integrators for the numerical solution of the Schrödinger equation, *Journal of Computational and Applied Mathematics*, 158 (2003) 83-92.
8. Th. Monovasilis, Z. Kalogiratou, T.E. Simos, Numerical Solution of the two-dimensional time- independent Schrödinger Equation by Symplectic Schemes, *Applied Numerical Analysis and Computational Mathematics*, 1 (2004) 195-204.
9. Z. Kalogiratou, Th. Monovasilis, T.E. Simos, Numerical solution of the Two-Dimensional time-independent Schrödinger equation with exponential-fitting methods, *Journal of Mathematical Chemistry*, 37 (2005) 271-279.
10. Th. Monovasilis, Z. Kalogiratou, T.E. Simos, Exponential- fitting symplectic methods for the numerical integration of the Schrödinger equation, *Journal of Mathematical Chemistry*, 37 (2005) 263-270.
11. Th. Monovasilis, Z. Kalogiratou, T.E. Simos, Trigonometrically and Exponentially fitted Symplectic Methods of third order for the numerical integration of the Schrödinger equation, *Applied Numerical Analysis and Computational Mathematics*, 2 (2005) 238-244.
12. Z. Kalogiratou, Th. Monovasilis, T.E. Simos, A Symplectic Trigonometrically Fitted Modified Partitioned Runge-Kutta Method for the Numerical Integration of Orbital Problems, *Applied Numerical Analysis and Computational Mathematics*, 2 (2005) 359-364.

13. Z. Kalogiratou, Th. Monovasilis, and T.E. Simos, Computation of the eigenvalues of the one-dimensional Schrödinger equation by symplectic methods, *International Journal of Quantum Chemistry*, 106 (2006) 795-802.

14. Kalogiratou Z., Symplectic Trigonometrically fitted Partitioned Runge-Kutta methods, *Physics Letters A*, 370 (2007) 1-7.

15. Th. Monovasilis, Z. Kalogiratou, T.E. Simos, Trigonometrically fitted and exponentially fitted symplectic methods for the numerical integration of the Schrödinger equation, *Journal of Mathematical Chemistry*, 40 (2006) 257-267.

16. Th. Monovasilis, Z. Kalogiratou, T.E. Simos, Families of Third and Fourth Algebraic Order Trigonometrically Fitted Symplectic Methods for the Numerical Integration of Hamiltonian Systems, *Computer Physics Communications*, 177 (2007) 757-763.

17. Th. Monovasilis, Z. Kalogiratou, T.E. Simos, Computation of the eigenvalues of the Schrödinger equation by symplectic and trigonometrically fitted symplectic partitioned Runge-Kutta methods, *Physics Letters A*, 372 (2008) 569-573.

18. Th. Monovasilis, Z. Kalogiratou, T.E. Simos, A family of trigonometrically fitted partitioned Runge–Kutta symplectic methods, *Applied Mathematics and Computation*, 209 (2009) 91-96.

19. Th. Monovasilis, Z. Kalogiratou, T.E. Simos, Computation of the eigenvalues of the Schrödinger equation by exponentially-fitted Runge–Kutta–Nyström methods, *Computer Physics Communications*, 180 (2009) 167-176.

20. Th. Monovasilis, Z. Kalogiratou, T.E. Simos, Symplectic Partitioned Runge–Kutta methods with minimal phase-lag, *Computer Physics Communications*, 181 (2009) 1251-1254.

21. Z. Kalogiratou, Th. Monovasilis and T.E. Simos Modified Runge-Kutta-Nystrom Methods for the Numerical Integration of Schrodinger Equation, *Computers and Mathematics with Applications*, 60 (2010) 1639-1647.

22. Th. Monovasilis, Z. Kalogiratou and T.E. Simos, Two new phase-fitted symplectic partitioned Runge Kutta methods, *International Journal of Modern Physics C*, 22, 12, (2011) 1343-1355.

23. Z. Kalogiratou, Th. Monovasilis and T. E. Simos, Symplectic Partitioned Runge-Kutta Methods for the Numerical Integration of Periodic and Oscillatory Problems, (2011), *Recent Advances in Computational and Applied Mathematics*, pages 169-208, Springer, ISBN 978-90-481-9980-8.

24. Th. Monovasilis, Z. Kalogiratou and T.E. Simos, Exponentially Fitted Symplectic Runge-Kutta-Nystrom methods, *Applied Mathematics & Information Sciences,* 7, (2013) 81-85.

25. Z. Kalogiratou, Th. Monovasilis, Diagonally Implicit Symplectic Runge-Kutta methods with special properties, *Applied Mathematics & Information Sciences*, 9, No. 1L, 11-17 (2015).

26. Z. Kalogiratou, Th. Monovasilis, T.E. Simos, A fourth order modified trigonometrically fitted symplectic Runge–Kutta–Nyström method, *Computer Physics Communications*, 185 (2014) 3151-3155.

27. Th. Monovasilis Z. Kalogiratou and T.E. Simos, Construction of exponentially fitted symplectic Runge-Kutta-Nystrom methods from Partitioned Runge-Kutta methods, *Applied Mathematics & Information Sciences*, 9, No 4, (2015) 1923-1930.

28. Z. Kalogiratou, Th. Monovasilis and T.E. Simos, Symplectic Runge-Kutta-Nystrom Methods with phase-lag order 8 and infinity, *Applied Mathematics & Information Sciences*, 9, No 3, (2015) 1105-1112.

29. Th. Monovasilis Z. Kalogiratou and T.E. Simos, Construction of Exponentially Fitted Symplectic Runge–Kutta–Nyström Methods from Partitioned Runge–Kutta Methods, *Mediterranean Journal of Mathematics*, 13 (2015) 2271-2285.

30. Higinio Ramos, Z. Kalogiratou, Th. Monovasilis,·T. E. Simos, An optimized two-step hybrid block method for solving general second order initial-value problems, *Numerical Algorithms*, 72 (2016) 1089-1102.

31. Z. Kalogiratou, Th. Monovasilis, Higinio Ramos, T. E. Simos, A new approach on the construction of trigonometrically fitted two step hybrid methods, *Journal of Computational and Applied Mathematics*, 303 (2016) 146-155.

32. Th. Monovasilis, Z. Kalogiratou, Higinio Ramos, T. E. Simos, Modified two-step hybrid methods for the numerical integration of oscillatory problems, *Mathematical Methods in the Applied Sciences*, 40(14), (2017) 5286-5294.

33. Th. Monovasilis, Z. Kalogiratou,·T. E. Simos, Trigonometrical fitting conditions for two derivative Runge-Kutta methods, *Numerical Algorithms*, 79(3), (2018) 787-800.

34. Z. Kalogiratou, Th. Monovasilis, T. E. Simos, New fifth order Two-Derivative Runge-Kutta methods with constant and frequency dependent coefficients, *Mathematical Methods in the Applied Sciences*, 42(6), (2019) 1955-1966.

35. Z. Kalogiratou, Th. Monovasilis, T. E. Simos, Two-derivative Runge-Kutta methods with optimal phase properties, *Mathematical Methods in the Applied Sciences* 43(3), (2020) 1267-1277.

36. Y.C. Bassiakos, Z. Kalogiratou, T. Monovasilis, N. Tsounis, Computational method for approximating the behaviour of a triopoly: An application to the mobile telecommunications sector in Greece, *International Journal of Computational Economics and Econometrics*, 11(1) (2020) 63-77.
37. Z. Kalogiratou, Th. Monovasilis, High order two-derivative Runge-Kutta methods with optimized dispersion and dissipation error, *Mathematics* 9(3) 232 , (2021) 1-11.

Publications in Conference Proceedings

1. Z. Kalogiratou, T.E. Simos, Assymptotically Symplectic Integrators of 3rd and 4th order for the numerical solution of the for the numerical solution of the Shrödinger equation, Proceedings of the second MIT conference on Computational Fluid and Solid Mechanics*, 2002, Elsevier Science, Vol 2, pp. 2012-2015.
2. Z. Kalogiratou, Th. Monovasilis and T.E. Simos, Numerical Solution of the two-dimensional time-independent Schrödinger Equation with exponential-fitting methods, Proceedings of the International Conference of Computational Methods in Sciences and Engineering (ICCMSE 2003), pp. 262 – 267, World Scientific.
3. Th. Monovasilis, Z. Kalogiratou and T.E. Simos, Numerical Solution of the two-dimensional time- independent Schrödinger Equation by Symplectic and Asymptotically Symplectic Schemes, NACoM 2003 Extended Abstracts, pp 121-124, Wiley Publications.
4. Z. Kalogiratou, Th. Monovasilis and T.E. Simos, Numerical Solution of the two-dimensional time-independent Schrödinger Equation, NACoM 2003 Extended Abstracts, pp 99-102, Wiley Publications.
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6. Th. Monovasilis, Z. Kalogiratou and T.E. Simos, Exponential-fitting symplectic methods for the numerical solution of the Schrödinger equation in ICNAAM 2004 Extended Abstracts, WILEY, pp 273-275
7. Th. Monovasilis, Z. Kalogiratou and T.E. Simos, Fourth order trigonometrically-fitted and exponentially-fitted symplectic methods for the numerical integration of the Schrödinger equation, ICCMSE 2004 Extended Abstracts, VSP, pp391-395.
8. Z. Kalogiratou, Th. Monovasilis and T.E. Simos, Symplectic and Exponentially-fitted Symplectic Methods of Second and Third order, in ICNAAM 2005 Extended Abstracts pp. 295-297, WILEY-VCH.
9. Z. Kalogiratou, Th. Monovasilis and T.E. Simos, Numerical solution of the two-dimensional time independent Schrödinger Equation by symplectic schemes based on Magnus Expansion, ICCMSE 2005, pp. 270-274, VSP*.
10. Th. Monovasilis, Z. Kalogiratou and T.E. Simos, Application of Symplectic Partitioned Runge-Kutta Methods to Hamiltonian Problems, ICCMSE 2005, pp. 417- 420, VSP.
11. Th. Monovasilis, Z. Kalogiratou and T.E. Simos, Trigonometrically Fitted Symplectic Methods for the Numerical Integration of Hamiltonian Systems, ICNAAM 2006 Extended Abstracts pp. 236-238,WILEY-VCH.
12. Z. Kalogiratou, Diagonally Implicit Trigonometrically fitted Symplectic Runge-Kutta methods, ICNAAM 2006 Extended Abstracts pp. 170-173, WILEY-VCH.
13. Z. Kalogiratou, Th. Monovasilis and T.E. Simos, An Exponentially fitted 6(4) pair of explicit Runge-Kutta-Nyström Methods (2007) AIP Conference Proceedings 963, 1253-1256.
14. Th. Monovasilis, Z. Kalogiratou and T.E. Simos, A Family of Trigonometrically-fitted Partitioned Runge-Kutta Symplectic Methods (2007) AIP Conference Proceedings 963, 1306-1310.
15. Kalogiratou S., Kalogiratou Z., Loulaki N., Melliou V., Monovasilis Th., Themelis Th., Mathematical models of competing species an analytical and numerical approach, Proceedings of the International Conference on Applied Economics (ICOAE 2008) pp. 449-454.
16. Z. Kalogiratou, Th. Monovasilis and T.E. Simos, Exponentially-Fitted Runge-Kutta-Nyström Methods for the Solution of the Schrödinger Equation, AIP Conference Proceedings 1048 (2008) 1040-1044.
17. Z. Kalogiratou, Th. Monovasilis, and T. E. Simos, Conditions for Trigonometrically Fitted Runge-Kutta Methods (2009) AIP Conference Proceedings 1168, 1600-1603.
18. Th. Monovasilis, Z. Kalogiratou, and T. E. Simos, A Phase-fitted Symplectic Partitioned Runge-Kutta Methods for the Numerical Solution of the Schrödinger Equation (2009) AIP Conference Proceedings 1168, 1595-1599.

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20. Th. Monovasilis, Z. Kalogiratou, and T. E. Simos, Symplectic partitioned Runge Kutta methods with minimum phase lag – Case of 5 stages (2010) AIP Conference Proceedings 1281 (2010) 698 - 702.

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23. Z. Kalogiratou, Th. Monovasilis, and N. Tsounis, Modelling Regional Employment. An application to high technology sectors in Greece, 1 (2012) 213-218.

24. Th. Monovasilis, Z. Kalogiratou, and T. E. Simos, Exponentially Fitted Symplectic Symplectic Runge Kutta Nyström methods (2012) AIP Conference Proceedings 1479, 1395-1398.

25. Z. Kalogiratou, Th. Monovasilis, and T. E. Simos, Diagonally Implicit Symplectic Runge-Kutta Methods with Special Properties (2013) AIP Conference Proceedings 1479, 1387-1390.

26. Z. Kalogiratou, Th. Monovasilis, S. Moustakli, N. Tsounis, Modeling the Mobile Telecommunications Sector in Greece, Procedia Economics and Finance, 5, 2013, Pages 377–385.

27. Th. Monovasilis, Z. Kalogiratou, and T. E. Simos, Construction of exponentially fitted symplectic Runge-Kutta-Nyström methods from partitioned Runge-Kutta methods (2014) AIP Conference Proceedings, 1618, 843-847.

28. Th. Monovasilis, Z. Kalogiratou, and T. E. Simos, Exponentially Fitted Symplectic Runge Kutta Nyström Methods Derived by Partitioned Runge Kutta methods (2013) AIP Conference Proceedings 1558, 1181-1185.

29. Z. Kalogiratou, Th. Monovasilis, and T. E. Simos, A fourth order modified trigonometrically fitted symplectic Runge-Kutta-Nyström Method (2013) AIP Confenence Proceedings 1558, 1176-1180.

30. Z. Kalogiratou, Th. Monovasilis, and T. E. Simos, A Sixth Order Symmetric and Symplectic Diagonally Implicit Runge-Kutta Method (2014) AIP Conference Proceedings 1618, 833-838.

31. Z. Kalogiratou, Th. Monovasilis, Higinio Ramos and T.E. Simos, Trigonometrically Fitted Two Step Hybrid Methods for the Numerical Solution of the Schrödinger Equation (2015) AIP Conference Proceedings 1648, 810008.

32. Higinio Ramos, Z. Kalogiratou, Th. Monovasilis and T.E. Simos, An Optimized Two-step Hybrid Block Method for Solving General Second Order Initial-value Problems of the form $y'' = f(x, y, y')$ (2015) AIP Conference Proceedings 1648, 810006.

33. Th. Monovasilis, Z. Kalogiratou, Higinio Ramos and T.E.Simos, A New Approach on the Construction of Trigonometrically Fitted Two Step Hybrid methods (2015) AIP Conference Proceedings 1648, 810009.

34. Higinio Ramos, Z. Kalogiratou, Th. Monovasilis and T.E. Simos, A trigonometrically fitted optimized two-step hybrid block method for solving initial value problems of the form $y'' = f(x, y, y')$ with oscillatory solutions (2015) AIP Conference Proceedings 1648, 810007 (2015).

35. Z. Kalogiratou, Th. Monovasilis, T.E. Simos, Two step hybrid methods of 7th and 8th order for the numerical integration of of second order IVPs (2016) AIP Conference Proceedings 1738, 480132.

36. Th. Monovasilis, Z. Kalogiratou and T.E.Simos, Trigonometrically fitted two step hybrid methods for the numerical integration of second order IVPs (2016) AIP Conference Proceedings 1738, 480133.

37. Z. Kalogiratou, Th. Monovasilis, T.E. Simos, A modified seventh order two step hybrid method for the numerical integration of oscillatory problems (2016) AIP Conference Proceedings 1790, 150030.

38. Th. Monovasilis, Z. Kalogiratou and T.E.Simos, Trigonometrically fitting conditions for two derivative Runge Kutta methods (2016) AIP Conference Proceedings 1790, 150029.

39. Z. Kalogiratou, Th. Monovasilis, T.E. Simos, Construction of Two Derivative Runge Kutta Methods of Order Five (2017) AIP Conference Proceedings 1863, 560092.

40. Th. Monovasilis Z. Kalogiratou and T.E. Simos, Trigonometrically Fitted Two Derivative Runge Kutta Methods with Three Stages (2017) AIP Conference Proceeding (2017) 1863, 560093.

41. Th. Monovasilis, Z. Kalogiratou, T.E. Simos, Modified Two Derivative Runge Kutta Methods for Solving Oscillatory Problems (2017) AIP Conference Proceedings 1906, 200021.

42. Th. Monovasilis, Z. Kalogiratou, T.E. Simos, Order conditions for two derivative Runge Kutta methods up to order six (2017) AIP Conference Proceedings 1906, 200020.

43. Z. Kalogiratou, Th. Monovasilis, T.E. Simos, Two Derivative Runge-Kutta methods with minimum phase-lag and amplification error (2018) AIP Conference Proceedings 1978, 470108.

44. Th. Monovasilis, Z. Kalogiratou and T.E.Simos, Phase Fitted and Amplification Fitted Two Derivative Runge-Kutta methods (2018) AIP Conference Proceedings 1978, 470109.

45. Th. Monovasilis, Z. Kalogiratou and T.E.Simos, Comparison of two derivative Runge Kutta methods (2018) AIP Conference Proceedings, 2040, 150019.

46. Z. Kalogiratou, Th. Monovasilis, T.E. Simos, Trigonometrically fitted two derivative Runge Kutta methods for the Schrödinger equation (2018) AIP Conference Proceedings 2040, 150020.

47. Monovasilis, T., Kalogiratou, Z., Simos, T.E., Optimized two derivative Runge-Kutta methods for solving orbital and oscillatory problems (2019) AIP Conference Proceedings 2116, 450107.

48. Kalogiratou, Z., Monovasilis, Th., Simos, T.E., Two derivative Runge-Kutta methods of order six (2019) AIP Conference Proceedings 2116, 450106.

49. Th. Monovasilis, Z. Kalogiratou, N. Tsounis, G. Bertsatos and S. Moustakli, Use of Differential Equations in Firms Behavior in an Oligopoly Market (2020) Springer Proceedings in Business and Economics, pp. 627-634.

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51. Gerassimos Bertsatos, Soultana Moustakli, Zacharoula Kalogiratou, Theodoros Monovasilis, An application of Differential Equations on Anthropogenic Climate Change (2021) Springer Proceedings in Business and Economics, pp. 527-534.