

# DR IOANNIS TH. FAMELIS

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I work as a Professor Applied Mathematics in the Department of Electrical and Electronic Engineering, Faculty of Engineering, University of West Attica. I hold a BSc in Mathematics (Kapodistrian University of Athens,1991) and a M.Sc. in Numerical Analysis and Programming (University of Dundee,1992). I received my PhD in Computational Mathematics and Numerical Solution of Differential Equations (Department of Mathematics, National Technical University of Athens, 1998).

I have taught mathematics and computer science courses in National Technical University of Athens, Agricultural University of Athens, Open University of Greece and TEI of Lamia, TEI of Athens, University of West Attica.

My main research interests focus on Applied and Computational Mathematics, Numerical Analysis of Ordinary, Partial and Functional Differential Equations, Symbolic Computations, Applications of Computational Intelligence and Neural Networks In numerical Mathematics and in Mathematical Problems and the Use of Mathematical Software in Teaching Mathematics.

I have participated in European Research Projects in NTUA for the enhancement of the Numerical Analysis courses in NTUA. I have also participated as a research member in five research programs in National Technical University of Athens, TEI of Athens and TEI of Sterea Hellas. I have competed as coordinator a research project with title “New numerical and computational methods for the solution of differential equations with applications in environmental issues.” which run under the framework of “Archimedes III Research Project” in TEI of Athens. I am research member of MicroSences laboratory.

I have written two books and I have refereed papers in several research journals.

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## SCIENTIFIC PROFILE

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<b>Publications in journals</b>	<b>42</b>
<b>Conferences with periodicity and referring procedure</b>	<b>37</b>
<b>Other conferences</b>	<b>25</b>
<b>Technical reports</b>	<b>1</b>
<b>Citation</b>	<b>995 (scopus)/955 (Web of Science)/1241 (Google Scholar)</b>
<b>Number of research programs as a principal investigator</b>	<b>1</b>
<b>Number of research programs as a research member team</b>	<b>5</b>
<b>Postdoctoral Research Grants</b>	<b>1</b>
<b>Books</b>	<b>4</b>

*(updated November 2024)*

## LIST OF PUBLICATIONS IN JOURNALS

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1. «**Equilibrium States of Adaptive Algorithms for Delay Differential Equations.**» (με τον Prof. D. J. Higham), Journal of Computational and Applied Mathematics, v. 58 (1995), pp 151-169.
2. «**A P-Stable Singly Diagonally Implicit RKN Method.**» (με Γ. Παπαγεωργίου και Χ. Τσίτουρα), Numerical Algorithms, v. 17 (1998), pp 345-353.
3. «**On using Explicit Runge-Kutta-Nyström Methods for the Treatment of Retarded Differential Equations with Periodic Solutions.**» (με Γ. Παπαγεωργίου) Applied Mathematics and Computation, v.102 (1999), pp 63-76.
4. «**Continuous Runge-Kutta-Nyström Methods for Initial Value Problems with Periodic Solutions.**» (με Γ. Παπαγεωργίου). Computer and Mathematics with Applications v. 42 (2001) pp. 1165-1176.
5. «**Explicit Numerov Type Methods for second order IVPs with oscillating solutions.**» (με Γ. Παπαγεωργίου και Χ. Τσίτουρα), International Journal of Modern Physics C v. 12, No. 5 (2001), pp. 657-666
6. «**Zero dissipative, explicit Numerov type methods for second order IVPs with oscillating solutions.**» (με Θ. Σίμο και Χ. Τσίτουρα), Numerical Algorithms 34 (2003), pp 27-40.
7. «**Symbolic Derivation of Runge-Kutta order conditions.**» (με Χ. Τσίτουρα και Σ. Παπακώστα), Journal of Symbolic Computation 37 (2004), pp 311-327.
8. «**Phase-Fitted Numerov type Methods.**» (με Α. Μπράτσο, Α. Κόλλια και Χ. Τσίτουρα), Applied Mathematics and Computation, 184 (2007) pp. 23-29.
9. «**Symbolic Derivation of Runge-Kutta-Nyström order conditions.**» (με Χ. Τσίτουρα), J. Comput. Appl. Math. 218 (2008), no 2 pp. 543-555.
10. «**A parametric finite-difference method for shallow sea waves,** (με Α. Μπράτσο και Α. Προσπαθόπουλο), Int. J. Numer. Meth. Fluids 53 (2007), pp129-147.
11. «**Quadratic SDIRK pair for treating chemical reaction problems,** (με Χ. Τσίτουρα) MATCH-Commun. Math. Comput. Chem., 60 (2008), no 3, pp 697-710.
12. «**Symbolic Derivation of Order Conditions for Hybrid Numerov-type methods solving  $y'' = f(x, y)$** » (με Χ. Τσίτουρα), J. Comput. Appl. Math. 218 (2008), no 2 pp. 543-555.
13. «**A discrete Adomian decomposition method for discrete nonlinear Schroedinger equations,** (με Α. Μπράτσο και Μ. Ehrhardt), Appl. Mathematics and Computation 197 (2008), pp 190-205.
14. «**Quadratic Stoermer-type methods for the solution of the Boussinesq equation by the method of lines,** (με Χ. Τσίτουρα) Num. Meth. For Partial Diff. Eqns. 24 (2008) no 5, pp 1321-1328
15. «**Runge Kutta Methods for Fuzzy Differential Equations**» (με Σ. Παλλιγκίνη και Γ. Παπαγεωργίου), Applied Mathematics and Computation, 209 (2009), pp. 97-105.

16. **«Explicit eighth order Numerov-type methods with reduced number of stages for oscillatory IVPs »** , International Journal of Modern Physics C, v. 19, No. 6 (2008) pp 957-970.
17. **«Numerov-Type Methods for oscillatory Linear Initial Value Problems»**, International Journal of Modern Physics C, v. 20, No. 3 (2009) pp 383-398
18. **«Numerical Solution of Stochastic Differential Equations with Additive Noise by Runge-Kutta Methods»** (με Ξανθό Φοίβο και Γ. Παπαγεωργίου), Journal of Numerical Analysis, Industrial and Applied Mathematics (JNAIAM) v.4, No. 3-4,(2009) pp 171-180.
19. **«On Modified Runge-Kutta Trees and Methods»**, (with Prof Ch. Tsitouras and Prof. Th. Simos), Computers and Mathematics with Applications v. 62 (2011) pp. 2101–2111.
20. **«Neural Network based derivation of efficient high order Runge-Kutta-Nystrom pairs for the integration of orbits.»**, International Journal of Modern Physics C, v. 22, No. 12 (2011), pp. 1309-1316.
21. **«Using neural networks for the derivation of Runge–Kutta–Nystrom pairs for integration of orbits»**, (with Prof Ch. Tsitouras) New Astronomy 17 (2012), pp. 469-473.
22. **«Classical and Quasi-Newton methods for a Meteorological Parameters Prediction Boundary Value Problem»** (with Georgios Galanis, Matthias Ehrhardt and Dimitrios Triantafyllou) AMIS, v.8, No. 6 (2014), pp 2683-2693.
23. **«Runge-Kutta solutions for an environmental parameter prediction boundary value problem.»**, J. Coupled Syst. Multiscale Dyn., 2(2) (2014), pp 62-69.
24. **«Quadratic shooting solution for an environmental parameter prediction boundary value problem.»**, (with Prof Ch. Tsitouras), Far East Journal of Applied Mathematics, v.91, No.2 (2015), pp.81-98.
25. **«On modifications of Runge Kutta Nystrom methods for solving  $y^{(4)}=f(x,y)$ »**, (with Prof Ch. Tsitouras), Applied Mathematics and Computation 273 (2016), 726–734.
26. **«A new Kalman Filter based on Information Geometry techniques for optimizing numerical environmental simulations»** (with G. Galanis, A. Liakatas) Stochastic Environmental Research and Risk Assessment, (2016) DOI 10.1007/s00477-016-1332-5.
27. **«Symbolic derivation of Runge Kutta Nystrom type order conditions and methods for solving  $y^{(3)}=f(x,y)$ »**, (with Prof Ch. Tsitouras), Applied Mathematics and Computation 297, (2017) 750–60.
28. **«Phase-fitted Runge-Kutta pairs of orders 8(7) »**, (with Prof Ch. Tsitouras and Prof. Th. Simos), Journal of Computational and Applied Mathematics, (2017) 321, 226-231.
29. **«A new approach to the construction of DIMSIMs of high order and stage order»**, (with Prof. Z. Jackiewicz), Applied Numerical Mathematics 119 (2017) pp. 79-93.
30. **«Review on explicit numerov type methods with constant coefficients.»** (with Prof Ch. Tsitouras and Prof. Th. Simos), Applied and Computational Mathematics 16(2) (2017) pp.89-113.
31. **«A highly accurate DE-PSO algorithm for the construction of initial value problem solvers.»** , (with A. Alexandridis and Prof Ch. Tsitouras), Engineering Optimization, <https://doi.org/10.1080/0305215X.2017.1400545>.
32. **«A new eighth order exponentially fitted explicit Numerov-type method for solving oscillatory problems.»**, Journal of Mathematical Chemistry, 56(5), 1456-1466 (2018) DOI 10.1007/s10910-018-0873-x

33. «**Bounds for Variable Degree Rational  $L_{\infty}$  Approximations to the Matrix Exponential**», (with Prof Ch. Tsitouras), Applied Mathematics and Computation, Applied Mathematics and Computation 338 (2018) 376–386, <https://doi.org/10.1016/j.amc.2018.06.040>.
34. «**Design and Evaluation of a Multidirectional Thermal Flow Sensor on Flexible Substrate**», (with Dimitris Barmpakos, Anastasios Moschos, Damianos Marinatos and Grigoris Kaltsas), (2019) Journal of Sensors, Volume 2019, Article ID 8476489, 10 pages, <https://doi.org/10.1155/2019/8476489>.
35. « **Neural network solution of pantograph type differential equations** », (with Chih-Chun Hou, T. E. Simos) Math Meth Appl Sci. 2019;1-6. <https://doi.org/10.1002/mma.6126>
36. «**Neural Network Solution of Single-Delay Differential Equations**» (with Jie Fang, Chenglian Liu, T. E. Simos) February 2020, Mediterranean Journal of Mathematics 17(1), DOI: 10.1007/s00009-019-1452-5
37. «**Parameterized Neural Network training for the solution of a class of stiff Initial Value Systems.** », in Neural Computing and Applications , 2021, 33(8), pp. 3363–3370, DOI: 10.1007/s00521-020-05201-1.
38. "**Optimization of the Navy's 3D Mine Impact Burial Prediction Simulation Model Impact35 Using High Order Numerical Methods.**" » (with G. Galanis, A. Donas) in Journal of Defense Modeling and Simulation 2021, <https://doi.org/10.1177/15485129211028661>.
39. "**A neural network training algorithm for singular perturbation boundary value problems**", Neural Computing and Applications (2021), (with T. E. Simos) <https://doi.org/10.1007/s00521-021-06364-1>
40. **Comparative study of FeedForward and Radial Basis Function Neural Networks for solving an Environmental Boundary Value Problem.** (2022), (with A. Donas, G. Galanis) Results in Applied Mathematics, 16 (2022) 100344. <https://doi.org/10.1016/j.rinam.2022.100344>
41. **Significant wave height prediction in nested domains using radial basis function neural networks** (2024) (with I. Kordatoç, A. Donas, G. Galanis, A. Alexandridis) Ocean Engineering 305 (2024) 117865.
42. **A Hybrid Extended Kalman Filter Based on Parametrized ANNs for the Improvement of the Forecasts of Numerical Weather and Wave Prediction Models** (with Athanasios Donas, George Galanis, Ioannis Pytharoulis) Atmosphere 2024, 15, 828. <https://doi.org/10.3390/atmos15070828>.

## LIST OF CONFERENCES WITH PERIODICITY AND REFERRING PROCEDURE

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1. «**Numerical Solution of Delay ODEs with Periodic Solutions.**», με Γ. Παπαγεωργίου στο 4<sup>th</sup> Hellenic European Conference on Computer Mathematics and its Applications (HERCMA 98), Αθήνα (1998).
2. «**Phase-Fitted Numerov type Methods.**», με Α. Μπράτσο και Χ. Τσίτουρα στο ICCMSE 2004, Αθήνα (2004).
3. «**Quadrature Numerov-type methods for the solution of the Boussinesq equation by the methods of lines.**» με Χ. Τσίτουρα IMACS 2005, Paris, France (2005)

4. **«On the solution of the Boussinesq equation using the Adomian decomposition method»** με Α. Γ. Bratsos, και D. Papadopoulos στο Proceedings of 17th IMACS World Congress on Scientific Computation, Applied Mathematics and Simulation, 11-15 July 2005, Paris, France, paper T2-I-21-0178.
5. **«An implicit numerical method for a shallow water equation in 2+1 dimensions»**, με Α. Γ. Bratsos, Κ. Belibassakis, στο ICNAAM 2005 (International Conference of Numerical Analysis and Applied Mathematics), 16-20 September 2005, Rhodes, Greece, Wiley-VCH (2005), pp. 103-106.
6. **«On the solution of the cubic Schrödinger equation»** με Α. Γ. Bratsos στο ICNAAM 2005 (International Conference of Numerical Analysis and Applied Mathematics), 16-20 September 2005, Rhodes, Greece, Wiley-VCH (2005), pp. 175-178.
7. **«A solution of the cubic nonlinear Schrödinger equation using the Adomian decomposition method»** με Α. Γ. Bratsos στο HERCMA 2005 (7ο Hellenic-European Conference on Computer Mathematics and its Applications), 22-24 September 2005, Athens, Greece.
8. **«On the numerical solution of the Kadomtsev-Petviashvili equation»** με Α. Γ. Bratsos στο Proceedings of ICCMSE 2005 (International Conference of Computational Methods in Sciences and Engineering), 21-26 October 2005, Loutraki, Greece, Lecture Series on Computer and Computational Sciences, Vol. 4 (2005), pp. 920-923.
9. **«Runge Kutta Methods for Fuzzy Differential Equations»** με S. Palligkinis και G. Papageorgiou στο Proceedings of ICCMSE 2005 (International Conference of Computational Methods in Sciences and Engineering), 21-26 October 2005, Loutraki, Greece, Lecture Series on Computer and Computational Sciences, Vol. 4 (2005)
10. **«On the numerical solution of the one-dimensional shallow sea waves»** με Α. Γ. Bratsos και Α. Μ. Prospathopoulos στο Proceedings of 5th MATHMOD (IMACS International Symposium on Mathematical Modelling), Vienna University of Technology, 8-10 February 2006, Vienna, Austria.
11. **« Phase-Fitted modified Runge-Kutta pairs of orders 6(5).»** με Χ. Τσίτουρα στο International Conference Of Numerical Analysis And Applied Mathematics 2006 Hersonnisos, Crete, Greece, 15-19 September 2006.
12. **«A numerical scheme for an improved model of Boussinesq type equations»**, με Α. Γ. Bratsos στο 8th International Conference on Mathematical and Numerical Aspects of Waves, University of Reading, 23-27 July 2007, England.
13. **«An implicit numerical scheme for the atmospheric pollution»**, με Τ. Papakostas, Α. Γ. Bratsos, Α. Ι. Delis, στο HERCMA 2007 (8ο Hellenic-European Conference on Computer Mathematics and its Applications), 20-22 September 2007, Athens, Greece.
14. **«A discrete Adomian decomposition for the cubic Schrödinger equation»** με Μ. Ehrhardt, Α. Γ. Bratsos, στο HERCMA 2007 (8ο Hellenic-European Conference on Computer Mathematics and its Applications), 20-22 September 2007, Athens, Greece.
15. **«Numerov-Type method families for second order Linear IVPs with oscillating solutions.»** στο International Conference Of Numerical Analysis And Applied Mathematics 2007 Corfu, Greece, 16-20 September 2007. AIP Conf. Proc. 936 , 195 (2007) ; <http://dx.doi.org/10.1063/1.2790106>
16. **«Runge Kutta families for Additive Noise Stochastic Differential Equations.»** με Fivos Xanthos, George Papageorgiou στο International Conference Of Numerical

Analysis And Applied Mathematics 2008 Kos, Greece, 16-20 September 2008, AIP Conf. Proc. 1048 , 182 (2008) ; <http://dx.doi.org/10.1063/1.2990887>

17. **«On the numerical solution of Improved Boussinesq Equation by the method of lines»**, στο International Conference Of Numerical Analysis And Applied Mathematics 2009, Rethymnon, Crete, Greece, 18-22 September 2009, AIP Conf. Proc. 1168 , 127 (2009) ; <http://dx.doi.org/10.1063/1.3241311>
18. **«On the numerical solution of a boundary value problem which rises in the prediction of meteorological parameters»**, στο International Conference Of Numerical Analysis And Applied Mathematics 2012, Kos, Greece, 19-25 September 2012. AIP Conf. Proc. 1479, 2118 (2012); [10.1063/1.4756609](http://dx.doi.org/10.1063/1.4756609)
19. **Quadratic RK shooting solution for a environmental parameter prediction boundary value problem** Ioannis Th. Famelis and Ch. Tsitouras (ICCMSE 2014 Athens) AIP Conf. Proc. 1618 , 839 (2014) ; <http://dx.doi.org/10.1063/1.4897863>
20. **Optimization of numerical weather/wave prediction models based on information geometry and computational techniques** , (ICCMSE 2014 Athens), George Galanis, Ioannis Famelis and Christina Kalogeri, AIP Conf. Proc. 1618 , 828 (2014) ; <http://dx.doi.org/10.1063/1.4897861>
21. **Long-Term Time-Series Prediction Using Radial Basis Function Neural Networks** Alex Alexandridis, Ioannis Th. Famelis and Charalambos Tsitouras, (ICNAAM 2014) AIP Conference Proceedings 1648, 740003 (2015); doi: [10.1063/1.4912958](http://dx.doi.org/10.1063/1.4912958)
22. **Differential Evolution for the derivation of Runge Kutta pairs.** Ioannis Th. Famelis and Ch. Tsitouras (ICNAAM 2015) AIP Conference Proceedings 1648, 740004 (2015); doi: [10.1063/1.4912959](http://dx.doi.org/10.1063/1.4912959)
23. **Minimax vs Pade approximation of matrix exponential for Normal and Nonnegative matrices.** (ICCMSE 2015 Athens), Ioannis Th. Famelis and Ch. Tsitouras, AIP Conference Proceedings 1702, 190013 (2015); doi: [10.1063/1.4938980](http://dx.doi.org/10.1063/1.4938980)
24. **Evolutionary Generation of high order Runge – Kutta – Nyström type pairs for solving  $y^{(4)} = f(x, y)$ »,** I. Th. Famelis, S. Tsitmidelis and Ch. Tsitouras (ICNAAM 2015) AIP Conference Proceedings 1738, 480037 (2016); doi: [10.1063/1.4952273](http://dx.doi.org/10.1063/1.4952273)
25. **Particle Swarm Optimization for Complex Nonlinear Optimization Problems** Alex Alexandridis, Ioannis Th. Famelis and Charalambos Tsitouras (ICNAAM 2015) AIP Conference Proceedings 1738, 480120 (2016); doi: [10.1063/1.4952356](http://dx.doi.org/10.1063/1.4952356)
26. **New Efficient Optimizing Techniques for Kalman Filters and Numerical Weather Prediction Models.** Ioannis Famelis, George Galanis, and Aristotelis Liakatas, (ICNAAM 2015) AIP Conference Proceedings 1738, 480031 (2016); doi: [10.1063/1.4952267](http://dx.doi.org/10.1063/1.4952267).
27. **High phase-lag order Runge Kutta pairs of orders 8(7).** Ioannis Th. Famelis and Charalambos Tsitouras (ICNAAM 2016) AIP Conference Proceedings **1863**, 560031 (2017); doi: <http://dx.doi.org/10.1063/1.4992714>
28. **New Phase-fitted Runge-Kutta Pairs of Orders 8(7)** Charalambos Tsitouras and Ioannis Th. Famelis (ICNAAM 2017), 25-30 September 2017, Thessaloniki, Greece.
29. **Extended Precision Rational L1 Approximations to the Matrix Exponential.** Charalambos Tsitouras and Ioannis Th. Famelis (ICNAAM 2018), 13-18 September 2018, Rhodes, Greece, AIP Conference Proceedings 2116, 450009 (2019); <https://doi.org/10.1063/1.5114476>

30. **On the Neural Network solution of stiff Initial Value problems.** V. Kaloutsa and Ioannis Th. Famelis (ICNAAM 2019), 23-28 September 2019, Rhodes, Greece
31. **Developing New Modeling Schemes for a Navy's mine Impact Burial Prediction Model,** MAST Med 2022 Athens, Athanasios Donas, Ioannis Famelis, Peter C Chu and George Galanis
32. **A time window process based on a hybrid application of Artificial Neural Networks and Kalman Filters for the improvement of the results of numerical wave prediction models.** ICCMSE2023, Ηράκλειο Κρήτη
33. **A Hybrid Extended Kalman Filter based on a parametrized Radial Basis Function Neural Network for the improvement of the forecasts of the numerical wave prediction model WAM-cycle 4: A time window process application.** ICNAAM 2023, Ηράκλειο Κρήτη
34. **A Hybrid Extended Kalman Filter Based on a Parametrized FeedForward Neural Network for the Improvement of the Results of Numerical Wave Prediction Models.** Comecap 2023 Αθήνα
35. **Improving the forecasts of a numerical wave model based on Kalman Filters and Artificial Neural Networks,** Geoenvia 2024, Χανιά Κρήτη
36. **A time window process based on a hybrid application of Radial Basis Neural Networks and Kalman Filters for the improvement of the results of numerical wave prediction models.** ICCMSE2023, Ηράκλειο Κρήτη
37. **An Effort To Plot The Boundary Of The Numerical Range Of A Square Matrix Via Taylor Expansion,** ICNAAM2024, Ηράκλειο Κρήτη

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## LIST OF OTHER CONFERENCES

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1. **«On the derivation of P-stable diagonally implicit Runge-Kutta-Nyström methods.»**, με Γ. Παπαγεωργίου στο International Conference on Scientific Computation And Differential Equations, Grado, Italy (1997).
2. **«Continuous Runge-Kutta-Nyström Methods for Initial Value Problems with Periodic Solutions.»**, με Γ. Παπαγεωργίου στο Numerical Methods and Computational Mechanics Conference, Miskolc, Hungary (1998).
3. **«Symbolic Derivation of Order Conditions for ODE Solvers.»** παρουσίαση στο 21<sup>st</sup> Biennial Conference on Numerical Analysis, Dundee Scotland (2005)
4. **«A linearized numerical scheme for the Kadomtsev-Petviashvili equation»** με A. G. Bratsos στο Proceedings of 1st IC – EpsMsO (1st International Conference on Experiments/Process/System Modelling/Simulation/ Optimization), 6-9 July 2005, Athens, Greece.
5. **«A solution of the Boussinesq equation using the Adomian decomposition method»** με A. G. Bratsos στο Proceedings of 1st IC – EpsMsO (1st International Conference on Experiments/Process/System Modelling/Simulation/ Optimization), 6-9 July 2005, Athens, Greece.
6. **«A linearized scheme for the solution of the Boussinesq equation using the Adomian decomposition method»** με A. G. Bratsos,, στο 2nd International

Conference From Scientific Computing to Computational Engineering), 5-8 July 2006, Athens, Greece.

7. **«On the numerical solution of the one-dimensional shallow water equations in constant-depth»**, με Α. Μ. Prospathopoulos, S. Sarantopoulos, Α. Γ. Bratsos, στο 2nd International Conference From Scientific Computing to Computational Engineering), 5-8 July 2006, Athens, Greece.
8. **“Symbolic Derivation of order conditions and principal truncation error terms for a class of two step methods for  $y' = f(x, y)$ ”** στο Twelfth International Congress on Computational And Applied Mathematics, Katholieke Universiteit Leuven, Belgium, July 10 - July 14, 2006.
9. **«The theta parameter influence on the Numerical Solution of various models describing one-dimensional shallow water waves»**, με Α. Γ. Bratsos στο Proceedings of 2nd IC – EpsMsO (2nd International Conference on Experiments/ Process/ System Modelling/ Simulation/ Optimization), 4-7 July 2007, Athens, Greece.
10. **«An explicit numerical scheme for the atmospheric pollution»**, με Τ. Papakostas, Α. Γ. Bratsos, Α. Ι. Delis and D. G. Natsis, στο Proceedings of 2nd IC – EpsMsO (2nd International Conference on Experiments/ Process/ System Modelling/ Simulation/ Optimization), 4-7 July 2007, Athens, Greece.
11. **«A family of eighth order, eighth stages Explicit Numerov type methods for second order IVPs with oscillating solutions»** στο SciCADE 2007 International Conference on Scientific Computation And Differential Equations 9-13 July 2007, Saint Malo, France.
12. **«A solution of the cubic nonlinear Schrödinger equation using the Adomian decomposition method»**, με Α. Γ. Bratsos στο Proceedings of HERCMA 2005 (7th Hellenic-European Conference on Computer Mathematics and its Applications), 22-24 September 2005, Athens, Greece.
13. **«Σχετικά με την αριθμητική λύση των μονοδιάστατων προβλημάτων διάδοσης ρηχών κυμάτων»**, με Α. Μπράτσο, Π. Προσπαθόπουλο στο 1<sup>ο</sup> Συνέδριο ΕΠΕΑΕΚ ΑΡΧΙΜΗΔΗΣ, Καινοτόμος Ανάπτυξη και Τεχνολογία: Ποσοτική και ποιοτική Αντιμετώπιση, 24-26 Νοεμβρίου 2005, Αθήνα.
14. **«Η προσεγγιστική μέθοδος Adomian στην επίλυση Διαφορικών εξισώσεων που προκύπτουν από Επιστημονικές Εφαρμογές»**, με Α. Μπράτσο στο 2<sup>ο</sup> Συνέδριο, ΕΠΕΑΕΚ ΑΡΧΙΜΗΔΗΣ, Ημερίδες Ανάπτυξης και Τεχνολογίας, 22-24 Νοεμβρίου 2005, Αθήνα.
15. **«Νέες μέθοδοι για την εύρεση θεμελιωδών χαρακτηριστικών της αλληλεπίδρασης ατόμων και μορίων με ηλεκτρομαγνητικά πεδία.»** με τους Κ. Δημητρίου, Β. Κωνσταντούδης, Θ. Μερκούρης, Γ. Κομνηνός, Ι. Φαμέλης, Ζ. Αναστάση, Ν. Πιάγκος, Χ. Τσίπουρας, Θ. Σίμος, Γ. Παπαγεωργίου και Κλ. Α. Νικολαΐδης, στο ΠΥΘΑΓΟΡΑΣ, Συνέδριο για την επιστημονική έρευνα στο Εθνικό Μετσόβιο Πολυτεχνείο, 5-8 Ιουλίου 2007, Πλωμάρι Λέσβου
16. **«Linearized numerical solutions of the Bousinesq equation using method of lines and Strormer type methods for oscillatory linear problems»**, στο 3rd International Conference From Scientific Computing to Computational Engineering), 5-8 July 2008, Athens, Greece.
17. **«Classical and Quasi-Newton methods on the numerical solution of a Boundary Value Problem which rises in the prediction of meteorological parameters using finite differences.»**, στο Seventh (7th) Workshop on Statistics Mathematics and



Computations, 28 - 29 May 2013, Tomar, Portugal. WSMC7 and ICRA5 Book of Abstracts. Ed. Teresa Oliveira, Maria Ivette Gomes, Christos Kitsos, Amílcar Oliveira and Luis Grilo.pg 78-79, INE-Instituto Nacional de Estatística. ISBN: 978-972-9473-71-5

18. **«Study and development of Nystrom-type” methods for integration of Hamiltonian problems»**, στο 6<sup>th</sup> Chaotic and Simulation International Conference (CHAOS 2013) June 11-14, 2013, Istanbul, Turkey.
19. **«Numerical and geometric optimization techniques for environmental prediction systems»**, (poster) στο SIAM Conference on Mathematical and Computational Issues in the Geosciences Padova, Italy, 17-20 June, 2013.
20. **«The numerical solution of a BVP which rises in the prediction of meteorological parameters.»** στο International Conference on Scientific Computation And Differential Equations (Scicade) 2013, Valladolid, Spain, 16-20 September, 2013.
21. **«Rational  $L_\infty$  approximations to the matrix cosine.»** στο International Conference on Scientific Computation And Differential Equations (Scicade) 2013, Valladolid, Spain, 16-20 September, 2013.
22. **«New Runge–Kutta–Nystrom pairs of order 8(6) for the integration of orbits.»**, στο 1st Conference of EME and EEE Conference, TEI of Piraeus, Piraeus, Greece, 15-26 July 2011.
23. **«A New Computational Methodology for the Optimization of Numerical Environmental Simulations»**, International Conference ‘Science in Technology’ SCinTE 2015, November 28-29, 2015. Athens, Greece.
24. **«On the modification of Differential Evolution strategy for the construction of Runge Kutta pairs.»**, 1st MINI CONFERENCE ON EMERGING ENGINEERING APPLICATIONS, MCEEA '15, November 28-29, 2015 , Halkida, Greece.
25. **«Evolutionary construction of Runge–Kutta–Nyström pairs of orders 5(4)»**, 1st MINI CONFERENCE ON EMERGING ENGINEERING APPLICATIONS, MCEEA '15, November 28-29, 2015 , Halkida, Greece.

## SESSIONS IN CONFERENCES

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1. **«Symposium on Computational issues on Applications of Differential Equations in Science and Engineering»** Ch. Tsitouras and I. Th. Famelis, ICMSE 2014
2. **«Symposium on computational intelligence: Theory and applications on mathematical modeling, optimization and control»** A. Alexandridis and I. Th. Famelis, ICNAAM 2014 AIP Conference Proceedings 1648, 740001 (2015); doi: 10.1063/1.4912956