CURRICULUM VITAE

MARIA HADJINICOLAOU

Personal Information

Name:	Maria Hadjinicolaou
Nationality:	Greek
Place of Birth:	Athens, Greece
Status:	Married, two children (1999, 2003)
Work Address:	Applied Mathematics Laboratory, School of Science and Technology, Δ.,B1.6
	Hellenic Open University.
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Education

1998 – 1999	Graduate certificate in "Open and Distance Learning", Hellenic Open University.
1988 – 1993	PhD, Chemical Engineering Dept., Division of Applied Mathematics, University of Patras
	Title: "Stokes flow in Spheroidal Geometry"
1981 - 1985	Bachelor Degree in Mathematics Dept. of Mathematics, University of Patras, Greece
1978 – 1981	Ralleio model Lyceum, Piraeus, Greece

Academic Positions

Since February 2015	Professor, Hellenic Open University, School of Science and Technology. Field: Applied Mathematics.
Since May 2017	Director of the Applied Mathematics Laboratory, Hellenic Open University, School of Science and Technology.

November 2000 – February 2015	Associate Professor, Hellenic Open University, School of Science and Technology.
1998 – 2000	Assistant Professor, position under contract, University of Ioannina, Department of Management of the Environmental and Natural resources. (University of The Western Greece, since 2009 and of Peloponnese since 2019).
1998 – 2000	Teaching Associate, at the Hellenic Open University (H.O.U.) in Mathematics. (Distance learning)
1998 – 2000	Collaborator/reviewer of the educational material in Mathematics, Developed by H.O.U
1996 - 2000	Teaching Associate at the Technological Educational Institute of Patras (since 2019 University of Peloponnese), School of Technology, successively at Depts. of the Mechanical Engineering, Electrical and Civil Engineering.
1993 – 1998	Research Fellow at ICEHT/FORTH and Mechanical and Aeronautics Dept., University of Patras.
1988 - 1993	Graduate student under scholarship, at ICEHT/FORTH and Chemical Engineering Department, University of Patras.
Research interests	**Multiscale, mathematical modelling of physical, biomedical and engineering problems, such as:** blood plasma flow around erythrocytes (RBCs) or LDL, blood flow in curved vessels (atheromatous or not), drug delivery and absorption, tumor growth, Stokes flow through porous media, behaviour and properties of solid materials at nanoscale (graphene) and macroscale under different mechanical load, and also: wave propagation and scattering problems (direct and inverse) by a simple and by many scatterers of different physical characteristics and geometrical shapes, moving boundary problems, development and use of non invasive techniques for medical diagnosis, testing, identification and reconstruction of objects and images.
	Mathematical methods: development of analytical methods for solving partial differential equations, (semiseparation and R-semiseparation of variables), spectral decomposition of tensors of mathematical physics and eigenfuncntion expansions in different curvilinear systems of coordiantes, (spheroidal, bispherical, ellipsoidal, etc.), Representation theory in low Reynolds number hydrodynamics, asymptotic analysis and special functions, transform methods in convex and non convex geometries, the Fokas method, boundary layer theory, fractional calculus.
	Mathematical models for learning processes, virtual educational "environments" and ICT tools for distance teaching and learning mathematics, STEM, STEAM education.
Scientific Responsibilities	
June 2001 - present	Coordinator of the Module "Mathematics" of the undergraduate programme: «Studies in physical sciences".
October 2005 – 2009	Coordinator of the postgraduate Module: "Mathematical models in Physical Sciences" of the Master programme "Graduate Studies in Mathematics", School of Science and Technology, HOU
October 2009 - 15	Coordinator of the postgraduate Module: "Special topics in mathematics", of the Master programme "Graduate Studies in Mathematics", School of Science and Technology, HOU.

October 2006 – 2007	Coordinator of the postgraduate Module "History, philosophy and didactics of mathematics", of the Master programme "Graduate Studies in Mathematics", School of Science and Technology, HOU.
February 2004- 2009	Secretary of the Scientific Committee of the Network for Distance Learning, in charge of the designing, the development and the implementation of ICT in distance learning.
May 2004-Sept.2011 and Sept. 2012-2015:	Founder and Director of Studies for the Master Programme "Graduate Studies in Mathematics", School of Science and Technology, HOU
Sept. 2015- present	Director of Studies for the Graduate Programme "Studies in Natural Sciences"
July 2018-present	Head of the Scientific Board of the joint, with Ionion University, Master programme: "Bioinformatics and Neuroinformatics".
January 2021- present	Director of Studies of the joint with Ionion University Master programme: "Bioinformatics and Neuroinformatics".
May 2023- present	Member of the Scientific Board of the joint with the BRF of Academy of Athens Masters Study programme " Precision medicine and novel therapies"

Administration

Since September -2024	Member of the Board of Directors of the Hellenic Open University
May 2022-now	Member of the Gender Equality Committee of the Hellenic Open University.
Sept 2019-2022	Member of the Internal Evaluation Committee of the School of Science and Technology of the Hellenic Open University.
May 2021	Member of the Board of the Hellenic Bioengineering Society, ELEVIT
March 2016-Sept 17	Member of the Administrative Board of the Hellenic Open University.
September 2013-16, & Sept 2007–Aug.2010	Dean of the School of Science and Technology, of the Hellenic Open University.
September 2006 – August 2007	Vice Dean of the School of Science and Technology, of the Hellenic Open University.
2014 – 2015:	Member of the Ethics Committee of the Hellenic Open University.
2013 – 2015	Member of the committee for the institutional development of the Hellenic Open University.
2004- now:	Head of the Library Committee of the Hellenic Open University.
Also September 2012 – 2015	Scientific Coordinator and project administrator of the «Digital integration and interconnection of the of the Hellenic Open University Library» project, ESPA 2011-13
June 2001 – May 2009	Scientific Coordinator and project administrator for the development and operation of the H.O.U. library
2008 – 2012	Member of the board, the Educational Methodology, Content and Technology Laboratory

January – July 2004	Person in charge and project administrator for the project "Organizing «IMO2004»", the International Mathematics Olympiad, held in Delphi, Greece.
2001 – now	Within the context of the development and the operation of the HOU, she has participated, either as president or as member, in more than 100 committees for evaluating scientific staff and resources.

PhD Supervision

She has supervised 12 (twelve) PhD students (the first four awarded)

Awarded

September 2009	• Dr. Baganis George, *"Boundary value problems in non-convex boundaries"*
November 2013	• Dr. Protopapas Eleftherios, *"Stokes flow problems applied to hemodynamics"*
September 2015	• Dr. Ampatzoglou Pantelis, *"Mathematical modelling of tumour growth"*
December 2018	• Dr. Messaris Gerasimos, "Study of flow within blood vessels before and after the insertion of a catheter using analytical methods."

In progress

- Tzelepis Alkiviades *"Stability analysis of tumor growth in spheroidal geometry"*
- Ananias Aggelos, *"Integration model for the interaction of the mathematical science and its application in higher education curricula"*
- Strati Aggeliki, "Acoustic scattering by an almost spherical obstacle"
- Kinakis John. "Analytical study of creeping flow in the toroidal system of coordinates and applications".
- Charemis Dimitris "Modelling of drug absorption through the Blood Brain Barrier"
- Raspoptsis Christos "Machine Learning for Predicting Quality of Life for Breast Cancer Patients"
- Babali Konstatnina «The effect of small perturbations on mathematical problems of electroencephalography and magnetoencephalography on spherical and ellipsoidal geometry»
- Stefanidou Aggeliki "Mathematical Modeling of Low Frequency Electromagnetic Wave Scattering in the Subsoil "

She also acts as member of the advisor committee for ten PhD students at HOU and other Universities.

Post docs

She has supervised four post doc. researchers

Dr. Protopapas Eleftherios, currently at NTUA, School of Applied Mathematics,

Dr. Ampatzoglou Pantelis, currently freelancer IT project manager.

Dr. Lampropoulos Dimitrios, Applied Maths Laboratory, SST, HOU, 2021-now

Dr. Lycourgiotis Sotiris ,Applied Maths Laboratory, SST, HOU, 2023-now

Master thesis Supervision

She has supervised Students; master thesis, some of which are

- Soufleris Constantine, *"Teaching math concepts in high school using computer packages, 2007."*

- Kalapodis Andreas, "*The bispherical coordinate system in static boundary value problems, 2008.*"

- Noulas Dimitrios, "*Study of Stokes flow in spheroidal geometry using computer packages, 2008.*"

- Protopapas Eleftherios, *"Study of Stokes flow in axisymmetric coordinate systems, 2008."*

- Krokos Spyridon, *"The role and nature of mathematics, 2009."*

- Tsanaktsidou Alexandra, "*The role and nature of mathematics, 2009*."

- Vaghia Argyroula, "*Mathematical models of tumor growth, 2010."*

- Giannoulis Konstantinos, "*The Green's function for potential problems and propagation, 2010."*

- Delakas Leonidas, "*A mathematical model for learning, 2011."*

- Kyriakopoulos George, *"Study of R-separation for solving PDEs, 2012."*

- Markou Heleni, "*A mathematical model for the vascular phase of tumor growth", 2013."*

- Mikelopoulos Dimitrios, "*Acoustic scattering of a sphere using the Homotopy perturbation method HPM, 2014".*

- Tsimberidis Mathaios, *" Study of creeping flow in the presence of more than one particles" 2015.*

- Antimachitou Aikaterini, *"Multiple Scattering problems from two cylindrical scatterers. Numerical investigation with* Mathematica*", 2018*

- Karachaliou Marina, *"The Green function for Hyperbolic and Parabolic equations", 2018*

- Kinakis John, *" A study of the steady axisymmetric blood flow in the case of a curved vessel", 2018*

She also has co-supervised many other master theses and participated in PhD Supervising Committees at various universities.

Teaching experience	
October 2020 – July 2020	Linear Algebra, Ordinary differential equations according to the "Distance learning methodology" or the module «Mathematics II» of the undergraduate programme "Studies in natural sciences".
October 2000 – July 2006 & October 2011 – up to now	Calculus of one and of many variables, vector analysis, according to the "Distance learning methodology" for the module «Mathematics I» of the undergraduate programme "Studies in natural sciences".
October 2006 – 2009	PDEs, Integral equations, topics in Linear Algebra and Functional Analysis, for the postgraduate module «Mathematical models in Natural Sciences», of the master Programme: "Graduate studies in mathematics" , HOU.
October 2000 – February 2001	Teaching "Transport Phenomena" University of Ioannina, Department of Management of the Environmental and Natural Resources, Agrinio School,
October 1998 – February 2001	Teaching "Mathematics I and Mathematics II" University of Ioannina, Department of Management of the Environmental and Natural Resources, Agrinio School,

October 1996 –2000	Teaching Calculus and Applied Mathematics at Technological Educational Institute of Patras, at electrical, mechanical, and civil engineering departments.
October 1996 – June 1997	Teaching "Computer programming" at Technological Educational Institute of Patras.
September 1985 – now	Contributed and participated at over thirty seminars, talks, courses on Applied Mathematics, Continuum Mechanics, Fluid Mechanics, and Scattering.
October – December 1993	Teaching course for engineers on: "Atmospheric pollution - Sources and control of pollutants.
September 1989 - June 1992	Teaching courses on Mathematical Analysis, Linear Algebra, ODE's, and PDE's at Chemical Engineering Dept., University of Patras as teaching assistant.

Short stays, visits, participation in workshops

December 1993	University of Cambridge, Great Britain, skills on numerical code for combustion RUN_1DL.
February 1994	La Sapienza, Polytechnic School, Rome, numerical simulation of compressible gas reaction flows.
February 1994	Research Center CRS4, Cagliari, Italy, presentation of CSP method for deriving reduced chemical kinetics mechanisms.
March 1994	Trieste, Italy, Workshop on Fluid Mechanics
May, 1994	University of Valladolid, Spain, workshop "Turbulence in Compressible Flows"
May, 1994	Research Center FASA-Renault, Valladolid, Spain workshop "Fundamental Studies on Turbulence Combustion"
March 1995	University of Southampton, Gr. Britain, chemical kinetics mechanisms for turbulence combustion numerical code.
April, July 1996	Technological Institute of Sofia, Bulgaria, development of mathematical methods for non-destructive testing.

Participation in Research and Educational projects

Funded by *European Union*	✖ Advanced educational project, "EPET I", 1991. ✖ "Innovative Non-Cryogenic Air Separators for Oxygen On-Site Generation", BRITE project, March 1993 - October 1993. ✖ "Investigation of chemical mechanisms that emit pollutants in combustion systems" Bilateral collaboration between Greece and G. Britain. April 1993 -

April 1995. Supported by: British Council. Partner: University of Cambridge, UK.

- ✘ "Simulation of pulsate combusts". Bilateral collaboration between Greece - Italy. October 1993 - October 1995. Supported by: Foreign ministry of Italy. Partner: University of Rome "La Sapienza" (IT).

- ✘ "Mechanisms of formation of Atmospheric pollutants", General Secretariat of Research and Technology, PENED January 1994 - January 1996.

- ✘ "Development of a Turbulent Combustion code for Industrial Application", ESPRIT project, February 1994 - February 1997.

- ✘ "New medical Instruments for early diagnosis and biotechnological applications", EPET II, February 1995 - October 1998.

- ✘ "Development of computational code for the simulation of adsorption phenomena. Water Purification", PENED. May 1996 - April 1998.

- ✘ "Scattering in anisotropic materials", 2004-2007, "Archimedes II"

- ✘ "Mathematical modelling of tumour growth", 2011-2014, "Heraclitus II", Coordinator

- ✘ "Mathematical and computational study of the flow field of biological fluids for therapeutic design in clinically important conditions", Archimedes III, 2012-2014, ESPA

- ✘ " Functional brain", "Excellence" research programme, 2012-2015, ESPA

- ✘ "Fussy systems and applications in engineering problems-Study of topological spaces". Democritus University of Thrace, MINEDU, 2014-2019.

- ✘ "Graphene-based disruptive technologies" Graphene Flagship, 2017-2018

- ✘ "Boosting digital skills and competences for librarians in Europe (BIBLIO) 01.11.19 - 31.10.2022, Erasmus+ KA2, 2020-22

- ✘ ERASMUS Higher Education (KA131 & KA171), 2022-2025

- ✘ "Mathematical modelling of flow in curved vessels and applications", School of Science and Technology Grand, HOU, Scientific responsible. (PI)2021-24

- ✘ Mathematical Modelling of Drug Penetration Across the Blood Brain Barrier-PENBRAIN School of Science and Technology Grand, HOU, Scientific responsible. (PI)2025-28

Funded by other sources	Inverse Scattering Techniques for Non-Destructive Testing and Remote Sensing", NATO Collaborative Research Grant, with Technical University of Sofia, Bulgaria, 1995-1997.
Institutional-development Projects	
1999	EPEAEK I, 3.1.ζ: Development of the department of management of the environmental and natural resources, Agrinio School, University of Ioannina.
2000 – 2009	"Development and Operation of the Library of the Hellenic Open University" EPEAEKII
2011 – 2015	"Digital integration and interconnection of the HOU Library", ESPA 2011-2015.

Publications

"**Stokes flow in Spheroidal Geometry**", PhD. Thesis, Chemical Engineering Dept., University of Patras, June 1993

Journal papers

1. DASSIOS G., **HADJINICOLAOU M.** & PAYATAKES, A. C. 1994. Generalized eigenfunctions and complete semiseparable solutions for stokes-flow in spheroidal coordinates. *Quarterly of Applied Mathematics,* 52**,** 157-191.

2. DASSIOS G., **HADJINICOLAOU M.,** COUTELIERIS, F. A. & PAYATAKES, A. C. 1995. Stokes-flow in spheroidal particle-in-cell models with Happel and Kuwabara boundary-conditions. *International Journal of Engineering Science,* 33**,** 1465-1490.

3. CHARALAMBOPOULOS A., DASSIOS G. & **HADJINICOLAOU M.** 1998. An analytic solution for low-frequency scattering by two soft spheres. SIAM Journal on Applied Mathematics, 58, 370-386.

4. **HADJINICOLAOU M.** & GOUSSIS D. A. 1998. Asymptotic solution of stiff PDEs with the CSP method: The reaction diffusion equation. SIAM Journal on Scientific Computing, 20, 781-810.

5. DASSIOS G., **HADJINICOLAOU, M** & CHARALAMBOPOULOS A. 1998. Bispherical Geometry in Multiple Scattering. Mathematical Methods in Scattering Theory and Biomedical Technology", Pitman Research Notes in Mathematics Series 390, 186-200.

6. ARNAOUDOV Y., DASSIOS G. & **HADJINICOLAOU M.** 1999. The resistive coated sphere in the presence of a point generated wave field. Mathematical Methods in the Applied Sciences, 22, 73-90.

7. DASSIOS G., **HADJINICOLAOU M.** & KAMVYSSAS G. 1999. Direct and inverse scattering for point source fields. The penetrable small sphere. ZAM, Zeitschrift Fur Angewandte Mathematik Und Mechanik, 79, 303-316.

8. DASSIOS G., **HADJINICOLAOU M.** & KAMVYSSAS G. 2000. The penetrable coated sphere embedded in a point source excitation field. Wave Motion, 32, 319-338.

9. HADJINICOLAOU M. 2000. Non-destructive identification of spherical inclusions. Advanced Composites Letters, 9, 25-33.

10. DASSIOS G., **HADJINICOLAOU M.** 2002. Multipole expansions in Stokes flow. International Journal of Engineering Science, 40, 223-229.

11. **HADJINICOLAOU M.** 2005. The influence of geometry on axisymmetric Stokes flow" Bulletin of the Greek Mathematical Society, 50, 135-157.

12. DASSIOS G., **HADJINICOLAOU M.,** KAMVYSSAS G. & KANDILI A.N. 2006. On the polarizability potential for two spheres. International Journal of Engineering Science, 44, 1520-1533.

13. BAGANIS G., **HADJINICOLAOU M.** 2009. Analytic solution of an exterior Dirichlet problem in a non-convex domain. IMA Journal of Applied Mathematics, 74, 668-684.

14. BAGANIS G., **HADJINICOLAOU M.** 2010. Analytic solution of an exterior Neumann problem in a non-convex domain. Mathematical Methods in the

Applied Sciences, 33, 2067-2075.

15. **HADJINICOLAOU M.,** KARIOTOU F. 2010. On the Effect of 3D anisotropic tumor growth on modelling the nutrient distribution in the interior of the tumor. Bulletin of the Greek Mathematical Society, 57, 189-197.

16. DASSIOS G., **HADJINICOLAOU M**., PROTOPAPAS E. 2012. Blood plasma flow past a red blood cell: mathematical modelling and analytical treatment. Mathematical Methods in the Applied Sciences, 35, 1547-1563.

17. **HADJINICOLAOU, M**. 2012. Mathematics in Open and Distance learning at HOU. The Open education Journal. vo.8, (1), 8-21, http://journal.openet.gr/index.php/openjournal/issue/view/17/showToc

18. BAGANIS G., DASSIOS G., **HADJINICOLAOU M**., PROTOPAPAS E. 2014. The Kelvin transformation as a tool for analyzing problems in medicine and technology. Mathematical Methods in the Applied Sciences, 37, 194-199.

19. **HADJINICOLAOU M.,** PROTOPAPAS E. 2014. On the R-semiseparation of the Stokes bi-stream operator in inverted prolate spheroidal geometry. Mathematical Methods in the Applied Sciences, 37, 207-211.

20. **HADJINICOLAOU M.** 2014. Virtual Class – An Appropriate Environment for Distance Learning Mathematics at an Open University. European Journal of Open, Distance and e-learning, http://www.eurodl.org/?p=current&sp=brief&article=620

21. **HADJINICOLAOU M**., KAMVYSSAS G., PROTOPAPAS E. 2015. Stokes flow applied to the sedimentation of a red blood cell. Quarterly of Applied Mathematics, **73** (2015), 511-523, https://doi.org/10.1090/qam/1390

22. **HADJINICOLAOU M.** 2015. A mathematical model for the blood plasma flow around two aggregated Low Density Lipoproteins, Springer Series Advances in Experimental Medicine and Biology, 802, 173-184.

23. **HADJINICOLAOU** M., PROTOPAPAS E., 2015. Translation of two aggregated Low Density Lipoproteins within blood plasma: a mathematical model, GeNeDis 2014. Advances in Experimental Medicine and Biology, vol 820. Springer, Cham. https://doi.org/10.1007/978-3-319-09012-2_12

24. **HADJINICOLAOU M**., PROTOPAPAS E. 2015. Spectral decomposition of the Stokes flow operators in the inverted prolate spheroidal coordinates. IMA Journal of Applied Mathematics, (2015), 1-17, doi:10.1093/imamat/hxv003.

25. AMPATZOGLOU P., DASSIOS G., **HADJINICOLAOU M.,** KOUREA H., VRAHATIS M.N., 2015, A chemical energy approach of avascular tumor growth. Multiscale modeling and qualitative results. SpringerPlus 2015, **4**:660 doi:10.1186/s40064-015-1417-5,

26. **HADJINICOLAOU M**., PROTOPAPAS E. 2016. Eigenfunction Expansions for the Stokes Flow Operators in the Inverted Oblate Coordinate System. Mathematical Problems in Engineering, Volume 2016 (2016), http://dx.doi.org/10.1155/2016/9049131

27. MESSARIS G.A.T., **HADJINICOLAOU M.,** KARACHALIOS G.T., **2016.** Unsteady fluid flow in a slightly curved pipe: A comparative study of a matched asymptotic expansions solution with a single analytical solution. Physics of Fluids 28, 081901 (2016); https://doi.org/10.1063/1.4960432
-Selected for special publication from AIP publishing house, as one among the best 10

out 1200 papers of the American Institute of Physics journals.

28. MESSARIS G.A.T., **HADJINICOLAOU M.**, KARACHALIOS G.T., **2016.** Studying Blood Flow Dynamics to Identify the Heart of Vessel Failure. Cardiac Diagnostics, August 16, 2016 https://www.dicardiology.com/content/studying-blood-flow-dynamics-identify-heart-vessel-failure

29. MESSARIS G.A.T., **HADJINICOLAOU M.**, KARACHALIOS G.T. (2017).Why do we live for much less than 100 years? A fluid mechanics view and approach**.** Physics of Fluids 29, 081903 http://dx.doi.org/10.1063/1.4998717

30. ANDROULIDAKIS C, KOUKARAS EN, PASTORE CARBONE MG, **HADJINICOLAOU M,** GALIOTIS C.,(2017) Wrinkling formation in simply-supported graphenes under tension and compression loadings. Nanoscale. 2017 Nov 30; 9(46):18180-18188. doi: 10.1039/c7nr06463b.

31. ANDROULIDAKIS C, KOUKARAS EN, **HADJINICOLAOU M**, GALIOTIS C., (2018) Non-Eulerian behavior of graphitic materials under compression CARBON, NOV 2018, Volume: 138, Pages: 227-233, doi:10.1016/j.carbon.2018.06.011

32. MANIKAS AC, MG PASTORE CARBONE, CR WOODS, Y WANG, I SOULI, G ANAGNOSTOPOULOS, **M HADJINICOLAOU,** KS NOVOSELOV, C GALIOTIS., 2019, Stress Transfer at the nanoscale on graphene ribbons of regular geometry. Nanoscale 2019, 11 (30), 14354-14361, doi: 10.1039/c9nr03166a

33. **HADJINICOLAOU M**., PROTOPAPAS E. 2020, Separability of Stokes equations in axisymmetric geometries, Journal of Applied Mathematics and Physics, Vol.8 No.2, February 2020,pp. 315-348 **,** doi: 10.4236/jamp.2020.82026

34. **HADJINICOLAOU M**., PROTOPAPAS E. 2020. A Microscale Mathematical Blood Flow Model for Understanding Cardiovascular Diseases. Springer Advances in Experimental Medicine and Biology 1194, 373-387, doi.org/10.1007/978-3-030-32622-7_35

35. **HADJINICOLAOU M**., PROTOPAPAS E., 2020, Necessary and sufficient conditions for the separability and the R-separability of the irrotational Stokes equation and applications", Journal of Applied Mathematics and Physics, Vol.8, No.11, November 2020, pp.2379-2401, doi:10.4236/jamp.2020.811176

36. **HADJINICOLAOU M**., PROTOPAPAS E., 2021, Qualitative Differences Between the Semi-separable and the "Almansi-Type" Stokes Stream Function Expansions in the Study of Biological Fluids. In *GeNeDis 2020* (pp. 259-271). Springer, Cham. DOI: 10.1007/978-3-030-78775-2_31

37. AMPATZOGLOU P., KARIOTOU F., **HADJINICOLAOU M.,** 2021, A Multiscale Mathematical Model for Tumor Growth, Incorporating the GLUT1 Expression. *Advances in Experimental Medicine and Biology, 2021; 1338:273-281.* Springer, Cham doi: 10.1007/978-3-030-78775-2_32.

38. VAFEAS P, **HADJINICOLAOU M**., PROTOPAPAS E.,2022, On the Analytical Solution of the Kuwabara-type Particle-in-Cell Model for the Non-Axisymmetric Spheroidal Stokes Flow via the Papkovich–Neuber Representation, Ordinary and Partial Differential Equations: Theory and Applications II, Symmetry 2022, 14(1), 170; https://doi.org/10.3390/sym14010170

39. KARIOTOU F., SINIKIS D, **HADJINICOLAOU M.,** 2022, On a Novel Algorithmic Determination of Acoustic Low Frequency Coefficients for Arbitrary Impenetrable Scatterers, November 2022 Mathematics 10(23):4487,

DOI: [10.3390/math10234487](https://doi.org/10.3390/math10234487)

40. DOUKAKIS S., VRAHATIS A. G. , EXARCHOS T., **HADJINICOLAOU M.** , VLAMOS P.,   MOUZA CH." Design, Implementation, and Evaluation of online Bioinformatics and Neuroinformatics Labs", International Journal of Online and Biomedical Engineering (IJOE), 2023,   Vol 19, Issue 1, p21, 10.3991/ijoe.v19i01.34041

41. **HADJINICOLAOU M**., PROTOPAPAS E., Mathematical study of the perturbation of magnetic fields caused by erythrocytes. Advances in Experimental Medicine and Biology, Jan 2023, 1424:281-288 https://doi.org/10.1007/978-3-031-31982-2_32 PMID: 37486505

42. **HADJINICOLAOU M**., PROTOPAPAS E., 2023,"Non-Convex Particle-in-Cell Model for the Mathematical Study of the Microscopic Blood Flow" Applications of Partial Differential Equations in Mathematical Physics, *Mathematics* 2023, *11*(9), 2156 https://doi.org/10.3390/math11092156

43. LAMPROPOULOS D., KARIOUTOU F., **HADJINICOLAOU M.**, " Investigating the Impact of Vessel Geometry on Cerebral Aneurysm Formation using Multi- Phase Blood Flow Models"., Computers & Mathematics with Applications, 176, 257-269. https://doi.org/10.1016/j.camwa.2024.10.039

44. PROTOPAPAS E , VAFEAS P., **HADJINICOLAOU M**., A mathematical model for studying the Red Blood Cell magnetic susceptibility "Applied Numerical Mathematics, 208, 356-365 https://doi.org/10.1016/j.apnum.2024.05.014

45. STEFANIDOU E., VAFEAS P., PROTOPAPAS E., HADJINICOLAOU M. The Rayleigh approximation of the low–frequency dipolar magnetic field scattered by a penetrable spherical cavity in the conductive Earth, 2025 *J. Phys.: Conf. Ser.* **3027** 012003, https://doi.org/10.1088/1742-6596/3027/1/012003

46. LAMPROPOULOS D.S., **HADJINICOLAOU M.** Investigating Hemodynamics in Intracranial Aneurysms with Irregular Morphologies: A Multiphase CFD Approach (2025) Mathematics, 13 (3), art. no. 505, DOI: 10.3390/math13030505

47. SPANOS, M., GAZEA, T., TRIANTAFYLLIDIS, V., MITSOPOULOS, K., VRAHATIS, A., **HADJINICOLAOU, M.,** BAMIDIS, P. D., & ATHANASIOU, A. (2025). Post Hoc Event-Related Potential Analysis of Kinesthetic Motor Imagery-Based Brain-Computer Interface Control of Anthropomorphic Robotic Arms. *Electronics*, *14*(15), 3106. https://doi.org/10.3390/electronics14153106

Proceedings of conferences (peer reviewed)

48. **HADJINICOLAOU M**., DASSIOS G., PAYATAKES A.C. 1992. "Complete Representation of Stokes Flow in Spheroidal Geometry". Proceedings of the 3rd National Congress of Theoretical Mechanics, pp. 8-13

49. **HADJINICOLAOU M.,** PANTAZOPOULOS G.I., KATSABANIS Y., GOUSSIS D.A. 1994. "Construction of Local Simplified Mechanisms", Proceedings of ICPF' 94 Int. Conf. on Nonlinear Dynamics, The Netherlands.

50. **HADJINICOLAOU M.,** GOUSSIS D.A. 1995. "Simplification of Boundary Value Problems with CSP", Proceedings of 4th National Congress in Mechanics, pp. 408-415

51. DASSIOS G., **HADJINICOLAOU M.,** 1996. "Interconnection Between Scattering and Multipole Expansions in Elasticity", Euromech Colloquium 354 "Stress Waves in Solids for Materials Characterization", Technical

University of Crete, Chania, Greece, Proceedings of Euromech Colloquium 354, Abstract p. 13

52. **HADJINICOLAOU M**., KOSTOPOULOS V. 1996. "Point Source Excitation for Scattering by Two Spheres", Proceedings of the Third Hellenic European Conference of Mathematics & Informatics 1996 pp. 309-316.

53. DASSIOS G., **HADJINICOLAOU M.,** 1996. "Multiple Scattering by Two Small Spheres", Proceedings of the Third Hellenic European Conference of Mathematics and Informatics, pp. 342-349.

54. DASSIOS G., **HADJINICOLAOU M**. 1998. Spheroidal Multipole Expansion for Stokes Flow Fields" Proceedings of the Fifth International Conference of the Hellenic Society of Theoretical and Applied Mechanics, Ioannina, 565-570.

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PAPACHRISTOPOULOS L., TSAKONAS G., Desperate Times Call for Desperate Measures: A comparative analysis of services between traditional and distance libraries in COVID-19 era Proceedings of the 13th QQML Conference Athens, 25-28 May 2021

75. SEFERLI I., ATHANASOPOULOU A., PAPACHRISTOPOULOS L., **HADJINICOLAOU M.,** Collections' usage evaluation as a tool for academic libraries' strategic development. 28o Panhellenic Conference of Academic Libraries, Corfu, 19-21   October, 2022

76. ANDREAS STYLIANOU, LEFTERIS KOUMAKIS, **MARIA HADJINICOLAOU**, ADAM ADAMOPOULOS AND ALKINOOS ATHANASIOU "Deep Learning Classification of Epileptic Magnetoencephalogram", Proceedings of the 10th Panhellenic Conference on Biomedical Technology - Aristotle Medical Forum, Thessaloniki, Greece, October 6-8, 2023

77. **HADJINICOLAOU M**. and KINAKIS G., "Stream function derivation for the steady axisymmetric viscous flow in toroidal geometry" ,International Conference of Numerical Analysis and Applied Mathematics, ICNAAM 2021 , AIP Conference Proceedings 2849, 450025 (2023) https://doi.org/10.1063/5.0163605

78. DIMITRIOS CHAREMIS, GREGORY SIVOLAPENKO, **MARIA HADJINICOLAOU "**Towards Precise Modelling of Diffusion Across the Blood-Brain Barrier", Genomics, Neuroscience, Therapeutics & Data Innovation, GENEDIS 2024, October 2024, Athens, Springer Proceedings Springer Nature: Advances in Experimental Medicine and Biology 1487, https://doi.org/10.1007/978-3-032-03398-7_43

79. K. BAMPALI, **M. HADJINICOLAOU** AND G. KAMVYSSAS, "Analytical Solution for Electric Potential in a Homogeneous Anisotropic Spherical Head Model with Directional Conductivity," *2025 IEEE 25th International Conference on Bioinformatics and Bioengineering (BIBE)*, Athens, Greece, 2025, pp. 287-293, doi: 10.1109/BIBE66822.2025.00055.

Oral presentations peer reviewed)

1. **HADJINICOLAOU M.** 1993. **"**What is Novel in Studying Creeping Flow within a Spheroidal Boundary" Presentation in the Workshop on Direct and Inverse Scattering Methods.

2. **HADJINICOLAOU M.** 1994. "Computational Singular Perturbation method in Combustion Simulations" Presentation in the Workshop on Fluid Mechanics, Trieste, Italy.

3. AMPATZOGLOU P., **HADJINICOLAOU M**. 2013. "On the effect of the geometry in cancer modeling" 5th Panhellenic Conference of Biotechnology. ELEVIT, Athens

4. DASSIOS G., **HADJINICOLAOU M.,** KAMVYSSAS G., KARIOTOU F., PROTOPAPAS E., 2015, "Analytical expansions for the Stress and the Torque, exerted by a viscous fluid on a Red Blood Cell". M3ST2015, Kalamata, Greece.

5. **HADJINICOLAOU M.,** PROTOPAPAS E., 2018, "Mathematical modelling of blood plasma flow through a swarm of Red Blood Cells", M3ST2018, Kalamata, Greece.

6. **HADJINICOLAOU M**. "Mathematical aid for understanding cardiovascular diseases due to ageing." GENEDIS 2018, Workshop on Computational modeling in Neurodegeneration. The Fields Institute, 26 October 2018,

University of Toronto. Canada.(invited)

Posters

1. **HADJINICOLAOU M.,** PROTOPAPAS E. 2012. A mathematical model for the sedimentation of red blood cells, 4th Panhellenic Conference of Biotechnology, ELEVIT, Athens.

2. **HADJINICOLAOU M.,** PROTOPAPAS E. 2013. Analytical expressions for flow quantities regarding the relative motion of an erythrocyte and blood plasma, 5th Panhellenic Conference of Biotechnology, ELEVIT, Athens.

3. **HADJINICOLAOU M.,** PROTOPAPAS E. 1st Congress of research results of SST-HOU, Rio Greece 25 July, 2016,

4. BAGANIS G., **HADJINICOLAOU M,** 1st Congress of research results of SST-HOU, Rio Greece 25 July, 2016,

5. **HADJINICOLAOU M.,** PROTOPAPAS E. Sedimentation velocity and initiation of Atherosclerosis, Patras IQ, 7-9 April 2017

6. KALFOUNTZOU E., ATHANASIOU A., NIKOLAOU C., **HADJINICOLAOU M**., PANDRIA N., MAGRAS I., BAMIDIS P.D., Rich-club functional sensorimotor networks after incomplete spinal cord injury, EANS2021, October 3-7, Hamburg.

7. G. K. EMMANOUILIDIS, **M HADJINICOLAOU,** P. KARAMANIS, E. N. KOUKARAS. Theoretical study of Group 14 Quantum Dots : Ligand & Passivation effect on their optoelectronic properties". 4ο συνέδριο χημείας φοιτητών, μεταπτυχιακών, διδακτόρων του Τμήματος Χημείας ΑΠΘ 2021

8. G. K. EMMANOUILIDIS, **M. HADJINICOLAOU,** M. P. SIGALAS, P., KARAMANIS, E. N. KOUKARAS, $Si_nGe_mXkL_l$ (n, m=24–186; l=1–4) Quantum Dots: Effects, of Ligand Termination and Halogen Passivation on optoelectronic properties 1st ACC 2023, 12-15/11 2023 Thessaloniki.

Books

- **Fundamental concepts in mathematics**, 2003, ed. HOU, written in accordance to the Distance Learning Methodology, HOU ed.

- **Linear Algebra,** 2005, ed., HOU, written in accordance to the Distance Learning Methodology , HOU ed. (with G. Kamvyssas).

- **Mathematical models in tumor growth ,** 2015 written in accordance to the Distance Learning Methodology , HOU ed. (with F. Kariotou)

Educational material

- She designs, organises and develops educational material (lecture notes, suplementary –e-material, (webcast –hypertext), presentations, for the mathematical molules of the HOU undregraduate programmes: "Studies in Natural Sciences", and "Informatics", and for the graduate modules of the Master programme "Graduate Studies in Mathematics".

- She has acted as a reviewer for the e-educational mathematical material developed by others for the HOU module" Special topics" of the Master

programme "Graduate Studies in Mathematics" in mathematical physics, medical sciences, Continuum mechanics.

- She performed editorial work concerning the distance learning aspect of educational meterial developed for the mathematical modules: Claculus of one and Calculus of many variables, and Differential EquationsI,II.

- She has prepared teaching notes in Mathematics for the students of the Patras Technological University during the period 1997-2000

Other scientific activities

May 2020
- Representative of the HOU to the International Council for Distance Education, ICDE

- Deputy Representative of HOU to the European University Association

May 2020
June 2018 to present
- Member of the governing board of the Hellenic Association of Academic Libraries HEAL.

June 2020
- Member of the Scientific Committee for the coordination and the assessment proposal for the development Open Educationl books and Resources, in the field of "Mathematics and computer Science", through the HEAL project KALLIPOS+

2019 and 2020:
- Reviewer for Marie S Curie Individual Fellowship , (IMSCA-IF)

2018
- Evaluator of the Cyprus Research and Innovation Foundation

2020
- Evaluator for educational and research Programmes of the School of Science and Technology, Hellenic Open University

2020-2023
- Reviewer for Kallipos+, Open Academic textbooks

She also

Acts as a reviewer for Int. Scientifc Journals (e.g. Mathematical methods in Applied Sciences, Physics of Fluids, SIAM Journal on Applied Mathematics, European Journal of Mechanics/ B Fluids, F. East Asian Journal on Applied Mathematics, Mathematics, Journal of Applied Mathematics and Physics, Journal of Mathematical Sciences: Advances and Applications, Mathematical methods in the Applied Sciences, Biocybernetics and Bioengineering, European Jl. Of Open and Distance Learning, Int. Journal of Mathematical Education in Science and Technology and for Int. Conferences.

- is evaluator for Min. of Education, EYDE/ETAK , for national scientific proposals/ projects

- has been a member of the Quality Assurance committee of the School of Science and Technology , HOU

- has participated in assessment committees of academic staff and personnel

- acts as member of the examining committee for PHD students,

- has participated in assessment committees for master theses.

- Is a member of the Greek Women in Mathematics Network.

Invited talks

- She has been invited speaker: IMMS workshop, Corfu 2007, HMS Patras, March 2014, 2hd Workshop of the lycioum of Evaggeliki School of Smyrna , June 2014, 4th

workshop on applications of partial differential equations, univ. of Patras, mathematics department 2015, etc. , indicatevly:

- 1st Congress of School of Science and Technology July 2016,Rio, Greece

- Semi-separation and R-semi separation of variables. Novel methods for obtaining the eigenfunctions of the axisymmetric Stokes flow operators School of mathematics and statistics, Hyderabad, India, December, 2016

- Applications of the R-semi separation of variables for obtaining analytical solutions of boundary value problems related to blood flow. School of mathematics and statistics, Hyderabad, India, December, 2016.

- Generalized semi-separable eigenfunctions for the Stokes flow operator in spheroidal geometry. 1st Congress of Greek mathematicians, 25-30 June 2018, Athens, Greece.

- Mathematical aid for understanding cardiovascular diseases due to aging. Workshop on Computational modeling in Neurodegeneration, The Fields Institute, 26 October 2018, Toronto, Canada

- Mathematical modeling of blood flow. 6^{n} conference on the «Applications of Differential Equations», 16 February 2019, Department of Mathematics, University of Patras, Greece.

- Distance education library, of Hellenic Open University. Challenges for Life Long Learning. 15 March 2019, National Library of Greece, NSF, Athens.

- Mathematical modeling of blood flow and techniques for modelling blood flow in vessels. 1st workshop in Mathematical research directions and future prospects, 2019, Athens, HOU.

- Natural sciences and distance education at HOU. Conference "Physics and Society". What physics do we want to teach? Greek Physicists Union, and Directorate of Secondary Education of Achaia 22-23 January 2021.

- Mathematical modeling and study of the effect of the magnetic field inside a red blood cell. 3rd Analysis Symposium 2-3 June 2023, Samos.

- Proposed Strategies for Achieving an 'A' Grade: Insights from a Mathematical Model, Department of Mathematics, SRR Government Arts and Science College (A), Karimnagar, Telangana, and St Fransis college for women, 19-20/2/2025 India, in *association with Indian Women and Mathematics*

- Mathematics: a useful "tool" in medicine, Department of mathematics, school of basic sciences, I.I.T. Bhubaneswar 21/02/2025, I.I.T. Bhubaneswar, India, *in association with Indian Women and Mathematics.*

- 1st and 2nd Congress of the Greek mathematician

- 2nd Congress of Greek women in mathematics , 4-5 July 2024 Greece

- Indian Women in Mathematics, India 2016

She is also | *member of the*

- Organizing committee of the 8th Int. Conference about Scattering and biomedical Engineering 2007,

- Scientific committee of the International Conference of Open and Distance Learning, ICODL 2011, "Alternative forms of education."
- Scientific committee of the International Conference on "Modern Mathematical Methods in Science and Technology", (M3ST2012), 26-28 August Kalamata , Greece.
- Scientific committee of the 30th Panhellenic Conference of the Hellenic Mathematical Society, October 2013, Karditsa, Greece.
- Scientific committee of the 1st world congress on Geriatrics and neurodegenerative Diseases, GENEDIS 2014.
- Member of the UN Hult Prize award board in Greece (2018)
- Scientific Committee of the 1st Congress of Greek mathematicians 25-30 June 2018, Athens, Greece.
- Scientific committee of the 3rd World Congress on Geriatrics and Neurodegenerative Diseases, GENEDIS 2018, October 2018, Toronto, Canada
- Organizing and Scientific committee for the workshop "Research directions and perspectives, of the HOU Applied Mathematics Laboratory", 9-10 February, 2019, HOU, Patras, Greece.
- Organizing committee of the workshop "Open educational resources and Lifelong Learning." 15 March 2019, National Library of Greece, NSF, Athens.
- Organizing and Scientific committee for the workshop "Research directions and perspectives, of the HOU Applied Mathematics Laboratory", 8-9 February, 2020, HOU, Athens, Greece.
- Scientific Responsible and Organizing committee of the 1st e-summer school in Mathematical Biology, in Mathematical modelling of infectious and non-infectious diseases, 9-12 September 2021.
- Scientific committee of the 10th Panhellenic Conference on Biomedical technology, 06-08 | 10 | 2023 Thessaloniki, Greece

She also

participated in

- the initiatives:

  - *"Mathematics in Industry",* coordinated by the European Research Foundation and the European mathematical Society,

  - *"Innovation through Mathematical modelling and Simulation",* Euroscience

- the scientific collaboration for the development of the digital Mathematical Library, hosted by ZentralBlatmath .

- has been member of the organizing committee of the communication of science festival, "Patras Science Festival", co-organized by the Hellenic Open University 2016, 2017

- has been invited to contributed with short talks regarding art and science at the opening of the art exhibition "refuge in art", organized by the LRM program of Hellenic Open university , Athens 2017

- has given the opening speech in many scientific and cultural events and workshops held at the Hellenic Open University Library.

is also interested in

- Open movement- open educational resources

	• Communicating mathematical sciences
	• Interrelation of science and art.
Scientific Societies:	• Greek Mathematical Society
	• American Mathematical Society
	• European Mathematical Society
	• Combustion Institute, Greek branch.
	• Hellenic Society of Biotechnology

November 2025