

## 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  
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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

### 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.

<i>November 2000 – February 2015</i>	Associate Professor, Hellenic Open University, School of Science and Technology.
<i>1998 – 2000</i>	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 ).
<i>1998 – 2000</i>	Teaching Associate, at the Hellenic Open University (H.O.U.) in Mathematics. (Distance learning)
<i>1998 – 2000</i>	Collaborator/reviewer of the educational material in Mathematics, Developed by H.O.U
<i>1996 - 2000</i>	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.
<i>1993 – 1998</i>	Research Fellow at ICEHT/FORTH and Mechanical and Aeronautics Dept., University of Patras.
<i>1988 - 1993</i>	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 eigenfunction expansions in different curvilinear systems of coordinates, (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

<i>June 2001 - present</i>	Coordinator of the Module “Mathematics” of the undergraduate programme: «Studies in physical sciences”.
<i>October 2005 – 2009</i>	Coordinator of the postgraduate Module: “Mathematical models in Physical Sciences” of the Master programme “Graduate Studies in Mathematics”, School of Science and Technology, HOU
<i>October 2009 - 15</i>	Coordinator of the postgraduate Module: “Special topics in mathematics”, of the Master programme “Graduate Studies in Mathematics”, School of Science and Technology, HOU.

<i>October 2006 – 2007</i>	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.
<i>February 2004- 2009</i>	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.
<i>May 2004-Sept.2011 and Sept. 2012-2015:</i>	Founder and Director of Studies for the Master Programme “Graduate Studies in Mathematics”, School of Science and Technology, HOU
<i>Sept. 2015- present</i>	Director of Studies for the Graduate Programme “Studies in Natural Sciences”
<i>July 2018-present</i>	Head of the Scientific Board of the joint, with Ionion University, Master programme: “Bioinformatics and Neuroinformatics”.
<i>January 2021- present</i>	Director of Studies of the joint with Ionion University Master programme: “Bioinformatics and Neuroinformatics”.
<i>May 2023- present</i>	Member of the Scientific Board of the joint with the BRF of Academy of Athens Masters Study programme “ Precision medicine and novel therapies”
<b>Administration</b>	
<i>May 2022-now</i>	Member of the Equality Committee of the Hellenic Open University.
<i>Sept 2019-2022</i>	Member of the Internal Evaluation Committee of the School of Science and Technology of the Hellenic Open University.
<i>May 2021</i>	Member of the board of the Hellenic Biengineering Society ,ELEVIT
<i>March 2016-Sept 17</i>	Member of the Administrative Board of the Hellenic Open University.
<i>September 2013-16,&amp; Sept 2007–Aug.2010</i>	Dean of the School of Science and Technology, of the Hellenic Open University.
<i>September 2006 – August 2007</i>	Vice Dean of the School of Science and Technology, of the Hellenic Open University.
<i>2014 – 2015:</i>	Member of the Ethics Committee of the Hellenic Open University.
<i>2013 – 2015</i>	Member of the committee for the institutional development of the Hellenic Open University.
<i>2004- now:</i>	Head of the Library Committee of the Hellenic Open University.
<i>Also September 2012 – 2015</i>	Person in charge and project administrator of the project for the «Digital integration and interconnection of the of the Hellenic Open University Library», ESPA 2011-13
<i>June 2001 – May 2009</i>	Person in charge and project administrator for the development and operation of the H.O.U. library
<i>2008 – 2012</i>	Member of the board, the Educational Methodology, Content and Technology Laboratory

<i>January – July 2004</i>	Person in charge and project administrator for the project “Organizing «IMO2004»”, the International Mathematics Olympiad, held in Delphi, Greece.
<i>2001 – now</i>	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.
<b>PhD Supervision</b>	She has supervised 12 (twelve) PhD students (the first four awarded)
<b><i>Awarded</i></b>	
<i>September 2009</i>	<ul style="list-style-type: none"> <li>• Dr. Baganis George, “Boundary value problems in non-convex boundaries”</li> </ul>
<i>November 2013</i>	<ul style="list-style-type: none"> <li>• Dr. Protopapas Eleftherios, “Stokes flow problems applied to hemodynamics”</li> </ul>
<i>September 2015</i>	<ul style="list-style-type: none"> <li>• Dr. Ampatzoglou Pantelis, “Mathematical modelling of tumour growth”</li> </ul>
<i>December 2018</i>	<ul style="list-style-type: none"> <li>• Dr. Messaris Gerasimos, “Study of flow within blood vessels before and after the insertion of a catheter using analytical methods.”</li> </ul>
<b><i>In progress</i></b>	<ul style="list-style-type: none"> <li>• Tzelepis Alkiviades “Stability analysis of tumor growth in spheroidal geometry”</li> <li>• Ananias Aggelos, “Integration model for the interaction of the mathematical science and its application in higher education curricula”</li> <li>• Strati Aggeliki, “Acoustic scattering by an almost spherical obstacle”</li> <li>• Kinakis John. “Analytical study of creeping flow in the toroidal system of coordinates and applications”.</li> <li>• Charemis Dimitris "Modelling of drug absorption through the Blood Brain Barrier"</li> <li>• Raspoftsis Christos “Machine Learning for Predicting Quality of Life for Breast Cancer Patients"</li> <li>• Babali Konstatnina «The effect of small perturbations on mathematical problems of electroencephalography and magnetoencephalography on spherical and ellipsoidal geometry»</li> <li>• Stefanidou Aggeliki “Mathematical Modeling of Low Frequency Electromagnetic Wave Scattering in the Subsoil “</li> </ul>
	She also acts as member of the advisor committee for ten PhD students at HOU and other Universities.
<b>Post docs</b>	<p>She has supervised four post doc. researchers</p> <p>Dr. Protopapas Eleftherios, currently at NTUA, School of Applied Mathematics,</p> <p>Dr. Ampatzoglou Pantelis, currently freelancer IT project manager.</p> <p>Dr. Lampropoulos Dimitrios, Applied Maths Laboratory, SST, HOU, 2021-now</p> <p>Dr. Lycourgiotis Sotiris ,Applied Maths Laboratory, SST, HOU, 2023-now</p>
<b>Master thesis Supervision</b>	<p>She has supervised more than 20 master thesis</p> <ul style="list-style-type: none"> <li>• Soufleris Constantine, "Teaching math concepts in high school using computer packages, 2007."</li> </ul>

- 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 fourteen master theses

## Teaching experience

<i>October 2020 – July 2020</i>	Linear Algebra, Ordinary differential equations according to the "Distance learning methodology" or the module «Mathematics II» of the undergraduate programme "Studies in natural sciences".
<i>October 2000 – July 2006 &amp; October 2011 – up to now</i>	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".
<i>October 2006 – 2009</i>	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.
<i>October 2000 – February 2001</i>	Teaching "Transport Phenomena" University of Ioannina, Department of Management of the Environmental and Natural Resources, Agrinio School,
<i>October 1998 – February 2001</i>	Teaching "Mathematics I and Mathematics II" University of Ioannina, Department of Management of the Environmental and Natural Resources, Agrinio School,

<i>October 1996 –2000</i>	Teaching Calculus and Applied Mathematics at Technological Educational Institute of Patras, at electrical, mechanical, and civil engineering departments.
<i>October 1996 – June 1997</i>	Teaching “Computer programming” at Technological Educational Institute of Patras.
<i>September 1985 – now</i>	Contributed and participated at over thirty seminars, talks, courses on Applied Mathematics, Continuum Mechanics, Fluid Mechanics, and Scattering.
<i>October – December 1993</i>	Teaching course for engineers on: “Atmospheric pollution - Sources and control of pollutants.
<i>September 1989 - June 1992</i>	Teaching courses on Mathematical Analysis, Linear Algebra, ODE’s, and PDE’s at Chemical Engineering Dept., University of Patras as teaching assistant.
<b>Short stays, visits, participation in workshops</b>	
<i>December 1993</i>	University of Cambridge, Great Britain, skills on numerical code for combustion RUN_1DL.
<i>February 1994</i>	La Sapienza, Polytechnic School, Rome, numerical simulation of compressible gas reaction flows.
<i>February 1994</i>	Research Center CRS4, Cagliari, Italy, presentation of CSP method for deriving reduced chemical kinetics mechanisms.
<i>March 1994</i>	Trieste, Italy, Workshop on Fluid Mechanics
<i>May, 1994</i>	University of Valladolid, Spain, workshop “Turbulence in Compressible Flows”
<i>May, 1994</i>	Research Center FASA-Renault, Valladolid, Spain workshop “Fundamental Studies on Turbulence Combustion”
<i>March 1995</i>	University of Southampton, Gr. Britain, chemical kinetics mechanisms for turbulence combustion numerical code.
<i>April, July 1996</i>	Technological Institute of Sofia, Bulgaria, development of mathematical methods for non-destructive testing.
<b>Participation in Research and Educational projects</b>	
<i>Funded by European Union</i>	<ul style="list-style-type: none"> <li>◆ Advanced educational project, “EPET I”, 1991.</li> <li>◆ “Innovative Non-Cryogenic Air Separators for Oxygen On-Site Generation”, BRITE project, March 1993 - October 1993.</li> <li>◆ “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.</li> </ul>

	<ul style="list-style-type: none"> <li>◆ “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).</li> <li>◆ “Mechanisms of formation of Atmospheric pollutants”, General Secretariat of Research and Technology, PENED January 1994 - January 1996.</li> <li>◆ “Development of a Turbulent Combustion code for Industrial Application”, ESPRIT project, February 1994 - February 1997.</li> <li>◆ “New medical Instruments for early diagnosis and biotechnological applications”, EPET II, February 1995 - October 1998.</li> <li>◆ “Development of computational code for the simulation of adsorption phenomena. Water Purification”, PENED. May 1996 - April 1998.</li> <li>◆ “Scattering in anisotropic materials”, 2004-2007, “Archimedes II” ,</li> <li>◆ “Mathematical modelling of tumour growth”, 2011-2014, “Heraclitus II”, Coordinator</li> <li>◆ “Mathematical and computational study of the flow field of biological fluids for therapeutic design in clinically important conditions”, Archimedes III , 2012.-2014, ESPA</li> <li>◆ “ Functional brain”, “Excellence” research programme, 2012-2015, ESPA</li> <li>◆ “Fussy systems and applications in engineering problems-Study of topological spaces”. Democritus University of Thrace, MINEDU, 2014-2019.</li> <li>◆ " Graphene-based disruptive technologies” Graphene Flagship, 2017-2018</li> <li>◆ «Boosting digital skills and competences for librarians in Europe (BIBLIO) 01.11.19 - 31.10.2022, Erasmus+ KA2, 2020-22</li> <li>◆ ” Mathematical modelling of flow in curved vessels and applications”, School of Science and Technology Grand, HOU, Scientific responsible.2021-24</li> </ul>
<i>Funded by other sources</i>	Inverse Scattering Techniques for Non-Destructive Testing and Remote Sensing”, NATO Collaborative Research Grant, with Technical University of Sofia, Bulgaria, 1995-1997.
<b>Institutional-development Projects</b>	
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.
<b>Publications</b>	“Stokes flow in Spheroidal Geometry”, PhD. Thesis, Chemical Engineering Dept., University of Patras, June 1993
<i>Journal papers</i>	1. DASSIOS G., HADJINICOLAOU M. & PAYATAKES, A. C. 1994. Generalized eigenfunctions and complete semiseparable solutions for stokes-flow in spheroidal coordinates. <i>Quarterly of Applied Mathematics</i> , 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](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/imat/hxv003](https://doi.org/10.1093/imat/hxv003).
25. AMPATZOGLU 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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1007/978-3-030-78775-2_32).
38. VAFEAS P, **HADJINICOLAOU M.**, PROTOPAPAS E., Particle-in-Cell Model for the Non-Axisymmetric Spheroidal Stokes Flow via the Papkovitch–Neuber Representation, *Symmetry* 2022, 14(1), 170; <https://doi.org/10.3390/sym14010170>
39. 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
40. **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](https://doi.org/10.1007/978-3-031-31982-2_32) PMID: 37486505
41. LAMPROPOULOS D., KARIOUTOU F., **HADJINICOLAOU M.**, “ Investigating the Impact of Vessel Geometry on Cerebral Aneurysm Formation using

*Proceedings of  
conferences (peer  
reviewed)*

- Multi- Phase Blood Flow Models”, Computers & Mathematics with Applications, to appear.
42. PROTOPAPAS E , Vafeas P., **HADJINICOLAOU M.**, A mathematical model for studying the Red Blood Cell magnetic susceptibility "Applied Numerical Mathematics, to appear
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*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” 5<sup>th</sup> 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, 5<sup>th</sup> Panhellenic Conference of Biotechnology, ELEVIT, Athens.
3. **HADJINICOLAOU M.**, PROTOPAPAS E. 1<sup>st</sup> Congress of research results of SST-HOU, Rio Greece 25 July, 2016,
4. BAGANIS G., **HADJINICOLAOU M.**, 1<sup>st</sup> 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,  $\text{SinGemXkLl}(n, m=24-186; l=1-4)$  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, supplementary –e-material, (webcast –hypertext), presentations, for the mathematical modules of the HOU undergraduate 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 material developed for the mathematical modules: Calculus of one and Calculus of many variables, and Differential Equations I, 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

- Member of the governing board of the Hellenic Association of Academic Libraries HEAL.

June 2018 to present

- Member of the Scientific Committee for the coordination and the assessment proposal for the development Open Educational books and Resources, in the field of “Mathematics and computer Science”, through the HEAL project KALLIPOS+

June 2020

2019 and 2020:

- Evaluator 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

- Evaluator for Kallipos+, Open Academic textbooks

## She also

acts as a reviewer for Int. Scientific 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, European JI. Of Open and Distance Learning, Int. Journal of Mathematical Education in Science and Technology, Journal of Applied Mathematics and Physics, Journal of Mathematical Sciences: Advances and Applications, Mathematical methods in the Applied Sciences) 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,

## Invited talks

- has participated in assessment committees for master theses.
- She has been invited speaker: IMMS workshop, Corfu 2007, HMS Patras, March 2014, 2nd Workshop of the Lycium of Evaggeliki School of Smyrna, June 2014, 4<sup>th</sup> workshop on applications of partial differential equations, univ. of Patras, mathematics department 2015, etc., more recently:
- 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. 1<sup>st</sup> 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<sup>n</sup> 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.

## *She is also member of the*

- Organizing committee of the 8<sup>th</sup> 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 30<sup>th</sup> Panhellenic Conference of the Hellenic Mathematical Society, October 2013, Karditsa, Greece.
- Scientific committee of the 1<sup>st</sup> world congress on Geriatrics and neurodegenerative Diseases, GENEDIS 2014.
- Member of the UN Hult Prize award board in Greece (2018)



- Scientific Committee of the 1<sup>st</sup> Congress of Greek mathematicians 25-30 June 2018, Athens, Greece.
- Scientific committee of the 3<sup>rd</sup> 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 10<sup>th</sup> 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

*April 2024*