Curriculum Vitae
CHRISTOS PAPOUTSELLIS

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   Research Gate Profile

PERSONAL DETAILS

Date of Birth: March 12, 1984
Nationality: Greek

CURRENT POSITION

June 2023 – ...	**Assistant Project Scientist** University of California San Diego, USA

RESEARCH INTERESTS

Mathematical modeling for fluid mechanics, free-surface waves, internal waves, dynamical systems, coastal and ocean engineering, oceanography

EXPERIENCE

March 2021 – March 2023	**Postdoctoral Researcher** National Institute of Advanced Technologies of Brittany (ENSTA), Brest, France Subject: *Probabilistic analysis of nonlinear rolling of ships under irregular excitation. Development of global analysis methods*
20-24 March 2022	**Visitor** Basque Centre of Applied Mathematics, Bilbao, Spain Subject: *Simulation of phase transitions using the Allen-Cahn equation*
January 2020 – January 2021	**Postdoctoral Researcher** Institut of Fluid Mechanics of Toulouse (IMFT), France Subject: *Modelling of internal tides.*
March 2019 – October 2019	**Postdoctoral Researcher** Centre for Research and Teaching in Environmental Geoscience (CEREGE) Marseille, France Subject: *Modelling of seiches and internal waves in the sea of Marmara.*
October 2017 – October 2018	**Postdoctoral Researcher** École Centrale Marseille, Institut de Recherche sur les Phénomènes Hors Equilibre (Irphé) and Saint Venant Hydraulics Laboratory, Chatou, France Subject: *Modelling of depth-induced wave breaking in fully nonlinear free-surface potential flow.*

EDUCATION

2016	**PhD in Marine Hydrodynamics** School of Naval Architecture and Marine Engineering National Technical University of Athens, Greece
2012	**Master of Science in Mathematical Modelling in Modern Technologies** (2 years) School of Applied Mathematics and Physical Sciences National Technical University of Athens, Greece
2009	**Diploma in Applied Mathematics and Physical Sciences** (5 years) Specialization : Mechanics of materials, Optoelectronics and Lasers School of Applied Mathematics and Physical Sciences National Technical University of Athens, Greece

DISSERTATIONS

- PHD THESIS: *Nonlinear water waves over varying bathymetry: Theoretical and numerical study using variational methods*, National Technical University of Athens, December 2016
  https://dspace.lib.ntua.gr/xmlui/handle/123456789/44741

- MASTER THESIS: *Nonlinear water waves: Comparison of different variational methods*, National Technical University of Athens, December 2012
  http://dspace.lib.ntua.gr/handle/123456789/38248

- DIPLOMA THESIS: *Numerical and experimental evaluation of spinal implants* (in Greek), National Technical University of Athens, January 2009

AWARDS

- PhD scholarship from National Technical University of Athens, July 2012 – July 2016

- Prize (300€) from NTUA for the publication *Exact semi-separation of variables in waveguides with nonplanar boundaries* (with G. Athanassoulis), Proc. R. Soc. A, 473:20170017, 2017. https://arxiv.org/abs/1702.04777

PUBLICATIONS

Peer-reviewed publications

1) **Ch. Papoutsellis**, M. Mercier, N. Grisouard, Internal tide generation from non-uniform barotropic body forcing. Journal of Fluid Mechanics, 964, A20.632 doi:10.1017/jfm.2023.358

2) Henry, P., Özeren, S., Yakupoğlu, N., Çakir, Z., de Saint-Léger, E., Desprez de Gésincourt, O., Tengberg, A., Chevalier, C., Papoutsellis, C., Postacıoğlu, N., Dogan, U., Karabulut, H., Uçarkuş, G., and Çağatay, M. N.: Slow build-up of turbidity currents triggered by a moderate earthquake in the Sea of Marmara, Nat. Hazards Earth Syst. Sci. Discuss. [preprint], https://doi.org/10.5194/nhess-2021-323, in review, 2021.

3) B. Simon, **Ch. Papoutsellis**, M. Benoit, M. Yates. (2019) Comparing methods of modeling depth-induced breaking of irregular waves with a fully nonlinear potential flow approach *Journal of Ocean Engineering and Marine Energy*, https://doi.org/10.1007/s40722-019-00154-7

4) G. Athanassoulis, C. Mavroeidis, P. Koutsogiannakis, **Ch. Papoutsellis** *A numerical study of the run-up and the force exerted on a vertical wall by a solitary wave propagating over two tandem trenches*, 2019, Journal of Ocean Engineering and Marine Energy. https://doi.org/10.1007/s40722-019-00148-5 (https://arxiv.org/abs/1907.11085)

5) **Ch. Papoutsellis**, M. Yates, B. Simon, M. Benoit *Modeling of depth-induced wave breaking in a fully nonlinear free-surface potential flow model*, Coastal Engineering (2019) 154, 103579, https://doi.org/10.1016/j.coastaleng.2019.103579 (https://arxiv.org/abs/1910.08982)

6) Th. Papathanasiou, **Ch. Papoutsellis**, G. Athanassoulis. *Semi-explicit solutions to the water-wave dispersion relation and their role in the nonlinear Hamiltonian Coupled-Mode theory*, Journal of Engineering Mathematics, (2019) 114 (1): 87–114. https://doi.org/10.1007/s10665-018-09983-1 (https://arxiv.org/abs/1802.07963)

7) **Ch. Papoutsellis**, A. Charalampopoulos, G. Athanassoulis. *Implementation of a fully nonlinear Hamiltonian Coupled-Mode Theory, and application to solitary wave problems over bathymetry*, European Journal of Mechanics B, Fluids (2018) 72: 199–224. https://doi.org/10.1016/j.euromechflu.2018.04.015 (https://arxiv.org/abs/1710.10847)

8) G. Athanassoulis, K. Belibassakis, **Ch. Papoutsellis**. *An exact Hamiltonian coupled-mode system with application to extreme design waves over variable bathymetry*, Journal of Ocean Engineering and Marine Energy. (2017) 3(4), 373–383. https://doi.org/10.1007/s40722-017-0096-4, Special Issue: Rogue Waves

9) **Ch. Papoutsellis**, G. Athanassoulis. *Exact semi-separation of variables in waveguides with nonplanar boundaries*, Proccedings of the Royal Society A (2017) 473:20170017, https://doi.org/10.1098/rspa.2017.0017 (https://arxiv.org/abs/1702.04777)

10) **Ch. Papoutsellis**. *Numerical simulation of non-linear water waves over variable bathymetry*, Procedia Computer Science (2015) 66, 174 – 183, https://doi.org/10.1016/j.procs.2015.11.021

Preprints

1) **Ch. Papoutsellis**, M.Benoit, On a high-order shallow-water wave model with canonical non-local Hamiltonian structure (under review in Proceedings of the Royal Society A)

2) **Ch. Papoutsellis**, Yves-Marie Scolan, Romain Hascoët, Capsize criteria in beam seas: Melnikov analysis vs. safe basin erosion (under review in Ocean Engineering)

3) **Ch. Papoutsellis**, P. Henry, C. Chevalier, Hydrodynamic simulation of tsunamis and seiches due to earthquakes in a closed basin: The Sea of Marmara Example (in preparation)

4) **Ch. Papoutsellis**, G. Athanassoulis *A new efficient Hamiltonian approach to the nonlinear water-wave problem over arbitrary bathymetry*, 2017, (http://arxiv.org/abs/1704.03276)

Peer-Reviewed Conference Papers

1) *A new high-order shallow water model with canonical Hamiltonian structure* , 18è Journées de l'Hydrodynamique, November 22 - 24, 2022, Poitiers, France (https://jh2022.sciencesconf.org/420564)

2) *Assesment of the Melnikov method for the ship roll problem* (with Y-M. Scolan), 18emes Journées de l'Hydrodynamique, November 22 - 24, 2022, Poitiers, France (https://jh2022.sciencesconf.org/413221)

3) *Modélisation du déferlement dû à la bathymétrie dans un code de simulation des vagues non-linéaires et dispersives en zone côtière* (with M. Yates, B. Simon and M. Benoit), 16emes Journées de l'Hydrodynamique, November 27 - 29, 2018, Marseille, France

4) *Fully nonlinear modeling of nearshore wave propagation including the effects of wave breaking* (with M. Yates, B. Simon and M. Benoit), International Conference on Coastal Engineering, July 30 - August 3, 2018, Baltimore, Maryland, USA

5) *Interaction of solitary water waves with uneven bottom using a Hamiltonian Coupled-Mode System* (with G. Athanassoulis and A. Charalampopoulos), In 6th International Conference Frontiers of Nonlinear Physics, July 17 - 23, 2016, Nizhny Novorod - St. Petersburg, Russian Federation

6) *Nonlinear irrotational water waves over variable bathymetry. The Hamiltonian approach with a new efficient representation of the Dirichlet to Neumann operator*, (with G. Athanassoulis), In Proceedings of the International Conference DAYS on DIFFRACTION 2015, pp. 20 – 26, St. Petersburg, Russian Federation

7) *New Form of the Hamiltonian equations for the nonlinear water-wave problem, based on a new representation of the DtN operator, and some applications* (with G. Athanassoulis), In Volume 7: Ocean Engineering, page V007T06A029, St. John's, Newfoundland, Canada, 2015. ASME.

Peer-Reviewed Abstracts

1) *Internal tide generation due to topographically adjusted barotropic tide* (with M. Mercier and N. Grisouard), Geophysical Research Abstracts, Vol. 19, vEGU21-8707, 2021, EGU General Assembly 2021, Vienna, Austria

2) *Sediment mobilization excited by earthquakes in the sea of Marmara* (with P. Henry, C. Chevalier, N. Yakupoğlu, S. Özeren, N. Postacıoğlu). 15th International Conference on Cohesive Sediment Transport Processes (INTERCOH 2019), Istanbul, Turkey, 13-17 October 2019

3) *Kinematics and dynamics of a solitary wave interacting with varying bathymetry and/or a vertical wall* (with G. Athanassoulis and A. Charalampopoulos), Geophysical Research Abstracts, Vol. 19, EGU2017-10716, 2017, EGU General Assembly 2017, Vienna, Austria

4) *New form of the Hamiltonian equations for the nonlinear water-wave problem, based to a new representation of DtN operator, and some applications* (with G. Athanassoulis and K. Belibassakis), Geophysical Research Abstracts, Vol. 15, EGU2013-13689-1, 2013, EGU General Assembly 2013, Vienna, Austria

Posters

1) *Recording and modeling of water column oscillations in the Sea of Marmara* (with P. Henry, C. Chevalier, S. Özeren, N. Postacıoğlu, N. Yakupoğlu, E. de Saint-Léger, O. de Gésincourt, Z. Çakir, M. Çağatay, A. Paté, L. Géli), Active Tectonics Research Group Meeting, October 15 - 18, 2019, Istanbul, Turkey

CONFERENCES

- **Talk:** "Internal tide generation due to topographically adjusted barotropic tide ", European Geosciences Union, General Assembly 2021

- **Talk:** "Fully nonlinear modeling of nearshore wave propagation including the effects of wave breaking", International Conference on Coastal Engineering, July 30 - August 3, 2018, Baltimore, Maryland, USA

- **Talk:** "Implementation and test of a modeling strategy for depth-induced breaking in fully nonlinear potential flow models", B'WAVES, May 28 - June 1, 2018, Marseille, France

- **Talk:** "Numerical simulation of non-linear water waves over variable bathymetry", 4th International Young Scientists Conference on Computational Science, June 25 - July 3 2015, Athens, Greece

- **Talk:** "Nonlinear irrotational water waves over variable bathymetry. The Hamiltonian approach with a new efficient representation of the Dirichlet to Neumann operator", International Conference DAYS on DIFFRACTION 2015, St. Petersburg, Russian Federation

- European Geosciences Union, General Assembly 2013, Vienna, Austria 7–12 April 2013

- International conference on Modern Mathematical Methods in Science and Technology, 3–5 September 2009, Poros, Greece

TEACHING

- 2003 – 2010 : Tutoring Mathematics and Physics for High School students (Private Sector)

- 2010 – 2017 : Tutoring Numerical Analysis and Partial Differential Equations for Undergraduate Students in Avakas Group (Private Sector)

- 2012 – 2016: Teaching assistant at the National Technical University of Athens (Courses, Laboratory Work and assistance in the supervision of Diploma theses). Courses: Probability Theory and Statistics: Applications in the marine environment, Ship dynamics and laboratory, Wave phenomena in the marine environment, Wavelet analysis, time-frequency analysis and applications

- 2021–2022 : Teaching assistant at ENSTA Bretagne: Fluid Mechanics (Wing theory), Variational Calculus, Partial Differential Equations, Mathematics for Engineers

JOURNAL REVIEW

- Water Waves, Springer

- Studies in Applied Mathematics, Wiley

- Journal of Fluid Mechanics, Cambridge University Press

- Water, Geosciences, MDPI

- Journal of Offshore Mechanics and Arctic Engineering, ASME

OTHER ACADEMIC ACTIVITIES

- One World Meeting of Young Mathematicians in Fluid Dynamics, June 17 – 18, 2021 (online)

- Spring School in Nonlinear Partial Differential Equations, May 30 – June 6 2012, Brussels, Belgium

- Summer School in Computational Fluid Dynamics, 20 – 24 July 2009, School of Chemical Engineering, National Technical University of Athens, Greece

- Master 2 Courses, Partial Differential Equations and scientific computing, October 2008-May 2009, University Paris-Sud XI, Orsay, France

- Summer School in Mathematics for Biomedical Engineering, June 2006, University of Warwick, United Kingdom

INTERNSHIPS

- Network Administration, Municipality of Lesvos, Greece, June-July 2005

- C++ programming, 4M-Advanced Technical Software Systems, Athens, Greece, September 2002-January 2003

COMPUTER SKILLS

- Programming Languages: MATLAB, Fortran, Python, basic knowledge in Julia, C++

- Math Software: *Mathematica*

- Simulation Software: ANSYS, CROCO (oceanic modeling system)

- Computer-Aided Design: SOLIDWORKS

- Text: LaTeX, MS Word

LANGUAGES

- Greek: Native

- English: Fluent

- French: Fluent