Biographical Note
Dr. Constantinos Politis

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Fields of Research Activities

Ship Hydrodynamics, Ship Design and Construction, Sea Waves.

Fields of Professional Activities

Rules for the Construction and Classification of Ships (Ship Surveys, Loads, Longitudinal and Local Strength, Ship Stability), International Conventions and Standards

Education

1982: Diploma in Naval Architecture and Marine Engineering, National Technical University of Athens.

1990: Doctor of Engineering, National Technical University of Athens.

Professional and Academic Positions

1990-1991: Post Doctoral Fellow, Laboratoire Mécanique et Energetique, Group Hydrodynamique Navale, Ecole National Supérieure de Techniques Avancées, Paris.

1991-1994: Post Doctoral Fellow, Laboratory of Naval Architecture, National Technical University of Athens.

1994-2005: Department of Research and Development, Hellenic Register of Shipping S.A., Senior Researcher.

2005-2007: Hull Department, Hellenic Register of Shipping S.A., Department Supervisor.

2007-2018: Technological Educational Institution of Athens, Naval Architecture Department, Professor.

20189-   : University of West Attica, Department of Naval Architecture, Professor.

List of publications

A. In Scientific Journals

S.P. Chouliaras, P.D. Kaklis, K.V. Kostas, A.I. Ginnis, C.G. Politis, 2021, "An Isogeometric Boundary Element Method for 3D lifting flows using T-splines", Comput. Methods Appl. Mech. Engrg. 373.
https://doi.org/10.1016/j.cma.2020.113556

K.V. Kostas, A. Amiralin, S. Sagimbayev, T. Massalov, Y. Kalel, C.G. Politis, 2020, "Parametric model for the reconstruction and representation of hydrofoils and airfoils", Ocean Engineering, 199. https://doi.org/10.1016/j.oceaneng.2020.107020

Kostas, K.V., Fyrillas, M.M., Politis, C.G., Ginnis, A.I., Kaklis, P.D., 2018, "Shape optimization of conductive-media interfaces using an IGA-BEM solver", Computer Methods in Applied Mechanics and Engineering, 340, pp. 600-614.

Kaklis, P. D., Politis, C. G., Belibassakis, K. A., Ginnis, A. I., Kostas, K. V. and Gerostathis, T. P. , 2017, "Boundary-Element Methods and Wave Loading on Ships". In Encyclopedia of Computational Mechanics Second Edition (eds E. Stein, R. Borst and T. J. Hughes). doi:10.1002/9781119176817.ecm2115

K.V. Kostas, A.I. Ginnis, C.G. Politis, P.D. Kaklis, 2017, "Shape optimization of 2D hydrofoil using an Isogeometric BEM solver", *Computer Aided Design,* **82**, 79-87.

K.V. Kostas, A.I. Ginnis, C.G. Politis, P.D. Kaklis, 2015, "Ship-hull shape optimization with a T-spline based BEM-isogeometric solver", *Computer Methods in Applied Mechanics and Engineering,* **284**, 611-622.

A.I. Ginnis, K.V. Kostas, C.G. Politis, P.D. Kaklis, 2015, "VELOS - A VR environment for ship applications: Current status and planned extensions", Virtual Realities - *Lecture Notes in Computer Science*, **8844**, pp.33-55, Springer.

A.I. Ginnis, K.V. Kostas, C.G. Politis, P.D. Kaklis, K.A. Belibassakis, Th.P. Gerostathis, M.A. Scott, T.J.R Hughes, 2014, "Isogeometric Boundary-Element Analysis for the Wave-Resistance Problem using T-splines", *Computer Methods in Applied Mechanics and Engineering,* **279**, 425-439.

K.A. Belibassakis, Th.P. Gerostathis, K.V. Kostas, C.G. Politis, P.D. Kaklis, A.I. Ginnis, C. Feurer, 2013, "A BEM-isogeometric method for the ship wave-resistance problem", *Ocean Engineering,* **60**, 53-67.

A.I. Ginnis, K.V. Kostas, C.G. Politis, P.D. Kaklis, "VELOS: A VR Platform for Ship-Evacuation Analysis", *J. CAD, 42*, 1045-1058, (2010).

C.G. Politis, M. Papalexandris, G.A. Athanassoulis, "A Boundary integral equations method for oblique water-wave scattering by cylinders governed by the modified Helmholtz equation", *Applied Ocean Research*, 24, 215-233 (2002).

G.J. Grigoropoulos, C.G. Politis, "A System for measuring the six degrees of motions of a moving body", *Ship Technology Research Schiffstechnik,* 46(1), 4-7 (1999).

G.A. Athanassoulis, P.D. Kaklis, C.G. Politis, "Low-frequency oscillations of a partially submerged cylinder of arbitrary shape", *Journal of Ship Research,* 39(2), 123-138 (1995).

G.A. Athanassoulis, <u>C.G. Politis</u>, "On the solvability of a two-dimensional wave-body interaction problem", *Quarterly of Aapplied Mathematics*, 54 (1), 1-30 (1990).

G.A. Athanassoulis, P.D. Kaklis, <u>C.G. Politis</u>, "The limiting values of added masses of a partially submerged cylinder of arbitrary shape", *Journal of Ship Research,* 32(1), 1-18 (1988).

B. In Conferences' Proceedings (Review of the full paper)

Wang, X., Chouliaras, S.P., Kaklis, P.D., Ginnis, A.A.-I., Politis, C.G., Kostas, K.V., 2017, "Wave-resistance computation via CFD and IGA-BEM solvers: A comparative study", Proceedings of the International Offshore and Polar Engineering Conference, pp. 706-712.

K.V. Kostas, A.I. Ginnis, C.G. Politis, P.D. Kaklis, 2015, "Ship-Hull Shape Optimization using BEM-Isogeometric Solvers", in *Proceedings of 12th International Marine Design Conference (IMDC 2015),* Tokyo, Japan.

Politis, C.G, Papagiannopoulos, A., Belibassakis, K.A., Kaklis, P. D., Kostas, K.V., Ginnis, A. I., Gerostathis, T. P. (2014) An isogeometric BEM for exterior potential-flow problems around lifting bodies. In: 11th World Congress on Computational Mechanics (WCCM XI). International Center for Numerical Methods in Engineering (CIMNE), Barcelona, Spain, pp. 2433-2444. ISBN 9788494284472.

K.V. Kostas, A.I. Ginnis, C.G. Politis, P.D. Kaklis, 2014, "VELOS: Crowd modelling for enhanced ship evacuation analysis" in HCI International 2014, Virtual, Augmented and Mixed Reality, 22-27 June 2014, Heraklion, Crete, Greece

Kostas, K. V., Ginnis, A. A. I., Politis, C. G., & Kaklis, P. D. (2012). Use of VELOS platform for modeling and assessing crew assistance and passenger grouping in ship-evacuation analysis. In *Sustainable Maritime Transportation and Exploitation of Sea Resources - Proceedings of the 14th International Congress of the International Maritime Association of the Mediterranean, IMAM 2011* (Vol. 2, pp. 729-736)

K.A. Belibassakis, T.P. Gerostathis, K.V. Kostas, <u>C.G. Politis,</u> P.D. Kaklis, A.I. Ginnis, C. Feurer, "A BEM-Isogeometric method with application to the wavemaking resistance problem of ships at constant speed", in *Proceedings of the ASME 2011 30th International Conference on Ocean, Offshore and Arctic Engeneering OMAE 2011*, Rotterdam, The Netherlands.

C.G. Politis, A.I. Ginnis, P.D. Kaklis, K. Belibassakis, C. Feuer, 2009, "An Isogeometric BEM for exterior potential-flow problems in the plane", in *Proceedings of SIAM/ACM Joint Conference on Geometric and Physical Modeling*, San Francisco, California, USA.

K.A. Belibassakis, T.P. Gerostathis, C.G. Politis, P.D. Kaklis, A.I. Ginnis, D.N. Mourkoyiannis, "A novel BEM_Isogeometric method with application to the wave-making ressistance problem of bodies at constant speed", in *Proceedings of 13th Congress of Intl. Maritime Assoc. of Mediterranean (IMAM)*, 2009, Istambul, Turkey.

A.A. Theodoulides, C.G. Politis, M.G. Gerardis , I.N. Ergas, "Comparative Study of Strength Assessment Procedures Used by the Classification Societies", in *Proceedings of Int. Marine Design Conference*, 2009, Oslo, Norway.

K.V. Kostas, A.I. Ginnis, P.D. Kaklis, C.G. Politis, "VELOS: A Virtual Environment for Life On Ships". in *Proceedings of the 3rd Annual Conference on Design for Safety*, Berkeley, CA; 2007, p. 139-50.

K.J. Spyrou, C.G. Politis, T.A. Loukakis, G. Grigoropoulos, "Toward a risk-based system for the departure control of passenger ships in rough weather in Greece", in "Proceedings of 2nd International Maritime Conference on Design for Safety", OSAKA Colloquium, SAKAI, Japan (2004).

P. Aillot, M. Prevosto, T. Soukissian, C. Diamanti, A. Theodoulides, C. Politis, "Simulation of sea state parameters process to study the profitability of a maritime line", in "Proceedings of Thirteenth International Offshore and Polar Engineering Conference", Honolulu, USA (2003)

C.G. Politis, F. del Castillo, "A systematic study on the effect of main design parameters and internal layout on damage stability characteristics of RoRo vessels", in "Proceedings of Eighth International Marine Design Conference", Athens, Greece (2002)

P.D.Kaklis, K. Kostas, C.G. Politis, V. Voutsinas, "An AutoCAD –based software for transforming hardcopy ship-line drawings to 3D CAD Models", in "Proceedings of Eighth International Marine Design Conference", Athens, Greece (2002).

C.G. Politis, V.G. Voutsinas, A.A. Theodoulides, "On line assessment of operability of a RO-RO passenger ship in a seaway", in "Proceedings of Atmospheric Modelling from Microscale to Global – 5th RAMS Workshop and related applications", Santorini, Greece (2002).

G.A. Athanassoulis, P.D. Kaklis, C.G. Politis, "Low-frequency asymptotic solutions for the wave-body interaction problem", in *"Proceedings of ERCIM Workshop on Numerical Methods for Linear and Nonlinear Problems in Wave Propagation"*, Heraclion, Crete (1992).

G.A. Athanassoulis, C.G. Politis, "On a radiation problem for two-dimensional floating bodies with corners", in *"Proceedings of the XIVth Scientific and Methodological Seminar on Ship Hydrodynamics"*, Varna, Bulgaria (1985).

G.A. Athanassoulis, T.A. Loukakis, <u>C.G. Politis</u>, P. Stolakis, "Oscillations of floating cylinders of arbitrary cross section. The limiting cases of small and large frequencies", in *"Proceedings of the 3rd International Congress on Marine Technology"*, Athens (1984).

C. In Conferences' Proceedings (Review of the abstract)

K.V. Kostas, C.G. Politis, I. Zhanabay, 2022, "On the effect of geometry parameterization on IGABEM analysis for exterior planar potential flow problems", 10th International Conference on Isogeometric Analysis (IGA 2022), Banff, Canada.

A. Arapakopoulos, K.V. Kostas, Th. Gerostathis, A.I. Ginnis, C.G. Politis, S.P. Chouliaras and P.D. Kaklis, 2022, "On the Accuracy and Efficacy of IGA-BEM Solvers for 3D Lifting Flows", 15th World Congress on Computational Mechanics & 8th Asian Pacific Congress on Computational Mechanics, Yokohama, Japan.

S.P. Chouliaras, K.V. Kostas, A.I. Ginnis, C.G. Politis and P.D. Kaklis, 2021, "Refinement strategies for 3D lifting flows using an IGA-BEM solver", XVI International Conference on Computational Plasticity (COMPLAS 2021), ECCOMAS-IACM Conference, Barcelona, Spain.

S.P. Chouliaras, P.D. Kaklis, C.G. Politis, K.V. Kostas, A.-A.I. Ginnis, 2019, "An IGA-BEM solver for Lifting Flows around Wings", *VII International Conference on Isogeometric Analysis (IGA 2019)*, Munich, Germany.

G. K. Anagnostopoulos, P.D. Kaklis, K.V. Kostas, C.G. Politis, A.-A.I. Ginnis, 2019, "Coupling an inviscid IGA – BEM solver with X-Foil boundary layer model", *VII International Conference on Isogeometric Analysis (IGA 2019)*, Munich, Germany.

K.V. Kostas, R. Polichshuk, P.D. Kaklis, C.G. Politis, 2019, "Refinement strategies for ship wave-resistance estimations using IGABEM solvers", *VII International Conference on Isogeometric Analysis (IGA 2019)*, Munich, Germany.

Kostas, K.V., Ginnis, A.I., Politis, C.G., Kaklis, P.D., 2018, "Shape-optimization and inverse problems in heat transfer employing an IGA-BEM approach", 6th European Conference on Computational Mechanics & 7th European Conference on Computational Fluid Dynamics (ECCM-ECFD 2018), Glasgow, UK.

Politis, C.G., Kostas, K.V., Ginnis, A.I., Kaklis, P.D., Chouliaras, S., 2018, "IGA-BEM for 2D Lifting Flows", 6th European Conference on Computational Mechanics & 7th European Conference on Computational Fluid Dynamics (ECCM-ECFD 2018), Glasgow, UK.

Kostas, K.V., Ginnis, A.I., Politis, C.G., Kaklis, P.D., 2017, "Shape-optimization of 2D hydrofoils using one-way coupling of an IGA-BEM solver with the boundary-

layer model", VII International Conference on Coupled Problems in Science and Engineering (Coupled Problems 2017), Rhodes, Greece.

Chouliaras, S.P., Kaklis, P.D., Ginnis, A.A.-I., Kostas, K.V., Politis, C.G., 2017, "An IGA-BEM method for the open-water marine propeller flow problem", V International Conference on Isogeometric Analysis (IGA 2017), Pavia, Italy.

K.V. Kostas, A.I. Ginnis, C.G. Politis, P.D. Kaklis, 2015, "Isogeometric Analysis for WaveBody Interaction Problems", SIAM Conference on Geometric & Physical Modelling (GD/SPM15), 12-14 October 2015, Salt Lake City, Utah, USA.

K.V. Kostas, A.I. Ginnis, C. Politis, P.D. Kaklis, 2014, "Ship-Hull Shape Optimization with a T-Spline based BEM-Isogeometric Solver", in IGA 2014: 7 Isogeometric Analysis: Integrating Design and Analysis, 8-10 January 2014, Austin, TX, USA.

Alexandros Ginnis, Régis Duvigneau, Constantinos Politis, Konstantoulakis Kostas, Kostas Bellibassakis, Theodoros Gerostathis, Panagiotis Kaklis, "A Multi-Objective Optimization Environment for Ship-Hull Design Based on a BEM-Isogeometric Solver", 5th International Conference on Computational Methods in Marine Engineering, May 2013, Hamburg, Germany.

K.V. Kostas, A.I. Ginnis, C.G. Politis, P.D. Kaklis, "Motions effect for crowd modeling aboard ships", in Proceedings 6th International Conference on Pedestrian and Evacuation Dynamics (PED 2012), 2012, Zurich, Switzerland.

A.I. Ginnis, C. Feurer, K.A. Belibassakis, P.D. Kaklis, K.V. Kostas, T.P. Gerostathis, C.G. Politis, 2011, "A CATIA® ship-parametric model for isogeometric hull optimization with respect to wave resistance", Proceedings of the 15th International Conference on Computer Applications in Shipbuilding, Trieste, Italy.

C.G. Politis, M. Lenoir, "An Application of the localized finite element method for the 2D steady free-surface flow problem", National Conference on "Wave problems in solids and fluids", Aristotle University, Thessaloniki November 1991.

C.G. Politis, M. Lenoir, "A hybrid variational method for solving the 2D nonlinear wave-resistance problem", 2 nd Scientific Conference on "Wave propagation problems", Research and Technology Foundation, Institute of Computational Mathematics, Heraklion Crete, June 1992.

Research Projects (selection)

2008-2011: **"Exact Geometry Simulation for Optimized Design of Vehicles and Vessels (EXCITING)",** Project Number 218536, FP7-SST-2007-RTD-1, Coordinator Johannes Kepler University, Funding by EC., Scientific responsible of Hellenic Register of Shipping.

2000-2003: **"Probabilistic Rules based optimal design of Ro-Ro passenger ships – (ROROPROB)"**, GRD1-CT 2000/00030, www.roroprob.org, Coordinator: Deltamarin Ltd, Funding by EC., Scientific responsible of Hellenic Register of Shipping.

2000- 2003: **"Harmonization of Rules and Design Rationale – (HARDER)"** G3RD-CT-1999-00028, www.harder.org, Coordinator: Det Norske Veritas. Funding by EC., Scientific responsible of Hellenic Register of Shipping.

1997-2001: "**SAFER EURORO**" **–** Thematic Network, BRRT-CT-5015, Coordinator: University of Strathclyde. Funding by EC., Scientific responsible of Hellenic Register of Shipping.

1996-1999: **Software development for the study of the ship structures integrity.**
Scientific Responsible: H.R.S.
In collaboration with: National Technical University of Athens
Funding: H.R.S. - Hellenic Ministry of Development

1996-1999: **Development of a rational approach for the assessment of ships wave loading. (Based on the wave climate of several sea areas)"**
Scientific Responsible: H.R.S.
In collaboration with: National Technical University of Athens
Funding: H.R.S. - Hellenic Ministry of Development

1996-1997: **Development of a hybrid CAD system for the design of surfaces and solids. Application in Naval Architecture and Mechanical Engineering .**
Scientific Responsible: National Technical University of Athens
Technical consultant / End User: H.R.S.
Funding: Hellenic Ministry of Development

1996-2000: **Development of design principles for the construction of High Speed Craft in F.R.P .**
Scientific Responsibles: H.R.S.-NTUA
Funding: H.R.S. - Hellenic Ministry of Development

1999-2001: **An integrated system for electronic management of drawings and codes with application to Naval Architecture .**
Scientific Responsibles: H.R.S.
In collaboration with: National Technical University of Athens
Funding: H.R.S. - Hellenic Ministry of Development

1999-2001: **Development of Rules and Regulations for the design, construction and certification of marinas & floating pontoons.**
Scientific Responsibles: H.R.S.

In collaboration with: National Technical University of Athens
Funding: H.R.S. - Hellenic Ministry of Development

1998-2000: **Design optimization of Ro/Ro Passenger vessel of new technology.**
Scientific Responsibles: NTUA
Partners: HRS, Elefsis Shipyards, MARTEDEC
Funding: Elefsis Shipyards - H.R.S. - Hellenic Ministry of Development

1999-2001 **A forecasting system of high resolution for maritime and other applications .**
Coordinator: University of Athens
Partners:HRS – STRAVON – COMMERCA - NMS
Funding: H.R.S. - Hellenic Ministry of Development

2001-2003: **Wave climate of ship routes and application to the safety of ships of new technology**
Research project in the context of the Greek-French collaboration
Scientific responsible: National Center of Marine Research

2004-2007: **An Enhanced operational System for wave monitoring and Prediction with Applications in Hellenic Navigation.**
Coordinator: National Center of Marine Research
Scientific responsible of Task 8: HRS
Partners:HRS – NCMR – NTUA – UOA and others
Funding: H.R.S. - Hellenic Ministry of Development