

RESUME

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Name: George S. Triantafyllou

Title: Professor Emeritus of Hydrodynamics.

Affiliation: Department of Naval Architecture and Marine Engineering, National Technical University of Athens, 9 Heroon Polytechniou, Zografou, Greece, 15773.

Higher Education:

- *Diploma in Civil Engineering*, National Technical University of Athens, Athens, Greece, 1977
- *M.S. in Civil Engineering*, California Institute of Technology, Pasadena, California, 1978
- *Sc.M. in Ocean Engineering*, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1980
- *Ph.D. in Ocean Engineering*, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1983

Positions held:

- **Post-Doctoral Research Associate**, Department of Ocean Engineering MIT, Cambridge, Mass., 1985 - 1988
- **Research Associate**, Department of Ocean Engineering MIT, Cambridge, Mass., 1988 - 1989
- **Principal Research Associate**, Department of Ocean Engineering MIT, Cambridge, Mass., 1989 - , 1990
- **Associate Professor** The Levich Institute and Department of Mechanical Engineering, The City College of The City University of New York, New York, New York, 1990- 1995.
- **Professor**, The Levich Institute and Department of Mechanical Engineering, The City College of The City University of New York, New York, New York, 1995- 1998.
- **Associate Professor**, Department of Naval Architecture and Marine Engineering, National Technical University of Athens, Athens, Greece, 1998 - 2004.
- **Professor**, Department of Naval Architecture and Marine Engineering, National Technical University of Athens, Athens, Greece, 2004-2022.

- **Professor Emeritus**, Department of Naval Architecture and Marine Engineering, National Technical University of Athens, Athens, Greece, 2023 - .

Military Service

Greek Navy, 1983- 1985

Awards:

- **The Captain Joseph H. Linnard Prize** for the best paper in 1996, awarded by the Society of Naval Architects and Marine Engineers.
- The 1995 article “*An efficient swimming machine*” was selected as **Highlight of the year 1995**, in the centennial issue of the Scientific American.
- **Best Graduate Paper Prize**, awarded by the New England Section of the Society of Naval Architects and Marine Engineers in 1983.

Membership in Scientific Societies:

American Physical Society: Life Member

Editorial activities:

- **Associate Editor**, *Journal of Fluids and Structures*, Academic Press, September 1st, 1990-August 31st, 2010.
- **Member of the Publications Committee**, Division of Fluid Dynamics of the American Physical Society, April 15, 1996-September 15, 1997.
- **Conference Co-Chairman**, *International Conference on Research Trends in Chaotic Dynamics in Fluids and Plasmas*, La Jolla, California, 1991.

List of Publications

I. Books

1. G. S. Triantafyllou, 2022 “An Introduction to Marine Hydrodynamics”, Edited by Kallipos (www.kallipos.gr), ISBN: 978-618-5667-01-6, (in Greek).

II. Invited review articles

1. M. S. Triantafyllou, G. S. Triantafyllou, and D. K. P. Yue, 2000 “Hydrodynamics of fish-like swimming”, *Annual Review of Fluid Mechanics*, **32**, 33-53.
2. M. S. Triantafyllou, and G. S. Triantafyllou, 1995 “An efficient swimming machine”, *Scientific American*, **272**(3), 64-71.

III. Articles in Refereed Journals

1. S. Peppas, L. Kaiktsis, C. Frouzakis, and G. S. Triantafyllou, 2021 “Computational study of three-dimensional flow past an oscillating cylinder”, *Fluids*, Volume **6**, 107, <https://www.mdpi.com/2311-5521/6/3/107>.
2. D. Kassis, E. Krasakopoulou, G. Korres, G. Petihakis, G. S. Triantafyllou, 2016 “Hydrodynamic features of the South Aegean Sea as derived from Argo T/S and dissolved oxygen profiles in the area”, *Ocean Dynamics*, Volume **66**(11), 1449-1466.
3. S. Peppas, and G. S. Triantafyllou, 2016 “Sensitivity of two-dimensional flow past transversely oscillating cylinder to streamwise cylinder oscillations”, *The Physics of Fluids*, Article Number 037102.
4. S. Peppas, L. Kaiktsis, and G. S. Triantafyllou, 2016 “Hydrodynamic Forces and Flow Structures in Flow Past a Cylinder Forced to Vibrate Transversely and Inline to a Steady Flow”, *ASME Journal of Offshore Mechanics and Arctic Engineering*, Volume **138**(1), 011803.
5. S. Peppas, L. Kaiktsis, and G. S. Triantafyllou, 2015 “Numerical simulation of three-dimensional flow past a cylinder oscillating at the Strouhal frequency”, *ASME Journal of Pressure Vessel Technology*, Volume **137**(1), 011302.
6. P. Perdicaris, L. Kaiktsis, and G. S. Triantafyllou, 2009 “Chaos in a cylinder wake due to forcing at the Strouhal Frequency”, *The Physics of Fluids*, Volume **21**, Article Number 101705.
7. S. Dong, G. S. Triantafyllou, and G. E. Karniadakis, 2008 “Elimination of vortex streets from bluff body wakes”, *Physical Review Letters*, Volume **100**, Paper 204501.
8. L. Kaiktsis, G. S. Triantafyllou, and Ozbas, M., 2007 “Excitation, inertia, and drag forces on a cylinder oscillating transversely to mean flow”, *Journal of Fluids and Structures*, Volume **23**, 1-21.
9. Shen, L., Yue, D.K.P and G. S. Triantafyllou, 2004 “Effects of surfactants on free-surface turbulent flows”, *Journal of Fluid Mechanics*, Volume **506**, 79-115.
10. N. P. Ventikos, E. Vergetis, H. N. Psaraftis, G. S. Triantafyllou, 2003 “A high-level synthesis of oil spill response equipment and countermeasures”, *Journal of Hazardous Materials*, Volume **107**(12), 51-58
11. Shen, L., Triantafyllou, G.S., and Yue, D.K.P. 2001 “Mixing of a passive scalar near a free surface”, *The Physics of Fluids*, **13**, 913-926 .
12. Shen, L., Triantafyllou, G.S. and Yue, D.K.P. 2000 “Turbulent diffusion near a free surface”, *Journal of Fluid Mechanics*, **407**, 145 - 166.
13. Shen, L., Zhang, X., Yue, D.K.P. and Triantafyllou, G.S. 1999, “The surface layer for free-surface turbulent flows”, *Journal of Fluid Mechanics*, **386** , 167 - 212.

14. K. Streitlien, and G. S. Triantafyllou, , 1998 “On the calculation of thrust from oscillating foils”, *Journal of Fluids and Structures*, **12**, 47-55.
15. M. S. Triantafyllou, D. S. Barrett, D.K.P. Yue, J.M. Anderson, M.A. Groesenbaugh, K. Streitlien and G.S. Triantafyllou, 1996, “A New Paradigm of Propulsion and Maneuvering for Marine Vehicles”, *Transactions of the Society of Naval Architects and Marine Engineers*, **104**..
16. K. Streitlien, G. S. Triantafyllou, and M. S. Triantafyllou, 1996 ”Efficient propulsion using a flapping foil”, *AIAA J.*, **34**(11), 2315-2319.
17. R. Mauri, R. Shinnar, and G. S. Triantafyllou, 1996 “Spinodal decomposition of binary mixtures”, *Physical Review E*, **53**(3), 2613-2623.
18. D. J. Welaard, and G. S. Triantafyllou, 1996 “Phase-locking of harmonically self-oscillating systems”, *Physica D*, **90**, 197-202.
19. A. A. Dimas, and G. S. Triantafyllou, 1995, “Barotropic/baroclinic instabilities of the Gulf Stream Extension”, *Journal of Physical Oceanography*, **25**, 825-834.
20. Gopalkrishnan, R., Triantafyllou, M.S., Triantafyllou, G.S. and Barrett, D. “Active vorticity control in a shear flow using a flapping foil”, *Journal of Fluid Mechanics*, **274**, 1 - 21.
21. G. S. Triantafyllou, 1994, “Note on the Kelvin-Helmholtz instability of stratified fluids”, *The Physics of Fluids A-Fluid*, **6**(1), 164-171.
22. A. A. Dimas, and G. S. Triantafyllou, 1994, “Non-linear interaction of shear flow with a free surface” *Journal of Fluid Mechanics*, **260**, 241-276.
23. G. S. Triantafyllou, M. S. Triantafyllou, and M.A. Groesenbaugh, 1993, “Optimal thrust development in oscillating foils” *Journal of Fluids and Structures*, **7**(2), 205-224.
24. G. S. Triantafyllou, 1992, “Three-dimensional flow patterns in two-dimensional wakes”, *ASME Journal of Fluids Engineering*, **114**(3), 356-361.
25. G. S. Triantafyllou, 1992, ”Vortex formation in ocean currents” *International Journal of Offshore and Polar Engineering*, **2**(3),245-250.
26. A. Tomboulidis, G. S. Triantafyllou, and G. E. Karniadakis, 1992 “A new mechanism of period-doubling in free shear flows”, *The Physics of Fluids A-Fluid*, **6**(7), 1329-1332.
27. K. Chang, A. Acrivos, and G. S. Triantafyllou, 1992 “On the nature of the instability in buoyancy driven flows”, *The Physics of Fluids A-Fluid*, **4**(6), 1156-1164.
28. G. E. Karniadakis and G. S. Triantafyllou, 1992 “Three-dimensional dynamics and transition to turbulence in the wake of bluff objects”, *Journal of Fluid Mechanics*, **238**, 1-30.

29. G. S. Triantafyllou, 1992, "Physical condition for absolute instability in inviscid hydroelastic coupling", *The Physics of Fluids A-Fluid*, **4**, 544-552.
30. G. S. Triantafyllou, 1991, "Instability characteristics of the flow through the Gibraltar straits", *Internstionsl Journal of Offshore and Polar Engineering*, **1**(2), 129-136.
31. M. S. Triantafyllou and G. S. Triantafyllou, and R. Gopalkrishnan, 1991, "Wake mechanics for thrust generation behind an oscillating foil", *The Physics of Fluids A-Fluid*, **3**(12), 2835-2837.
32. M. S. Triantafyllou and G. S. Triantafyllou, 1991, "Frequency coalescence and mode localization: A geometric theory", *Journal of Sound and Vibration*, **150**(3), 485-500.
33. M. S. Triantafyllou and G. S. Triantafyllou, 1991, "The paradox of the hanging string: An explanation using singular perturbations", *Journal of Sound and Vibration*, **148**(2), 343-351.
34. G. S. Triantafyllou and G. E. Karniadakis, 1990, "Computational reducibility of unsteady viscous flows", *The Physics of Fluids A-Fluid*, **2**(5), 653-656.
35. G. S. Triantafyllou and A. A. Dimas, 1989, "Interaction of separated flows with a free surface at low Froude numbers", *The Physics of Fluids A-Fluid*, **1**(11), 1813-1821.
36. G. E. Karniadakis and G. S. Triantafyllou 1989, "The crisis of transport measures in chaotic flow past a circular cylinder", *The Physics of Fluids A-Fluid*, **1**(4), 628-630.
37. G. E. Karniadakis and G. S. Triantafyllou 1989, "Frequency selection and asymptotic states in laminar wakes", *Journal of Fluid Mechanics*, **199**, 441-469.
38. G. S. Triantafyllou and C. Chrysosostomidis 1989 "The Dynamics of Towed Arrays", *ASME, Journal of Offshore Mechanics and Arctic Engineering*, **111**, 208-213.
39. G. S. Triantafyllou, K. Kupfer and A. Bers 1987 "Absolute instabilities and self-sustained oscillations in the wakes of circular cylinders" 1987, *Physical Review Letters*, **59**(17), 1914-1917.
40. G. S. Triantafyllou, M. S. Triantafyllou, and C.Chrysosostomidis 1987 "Stability analysis to predict vortex street characteristics and forces on circular cylinders" *ASME, Journal of Offshore Mechanics and Arctic Engineering*, **109**, 148-154.
41. G. S. Triantafyllou, M. S. Triantafyllou, and C.Chrysosostomidis 1986 "On the formation of vortex streets behind stationary cylinders" *Journal of Fluid Mechanics*, **170**, 461-477.
42. G. S. Triantafyllou and C.Chrysosostomidis 1985 "Stability of a string in axial flow", *ASME, Journal of Energy Resources Technology* , **107**, 421-425.
43. G. S. Triantafyllou and C.Chrysosostomidis 1984 "Analytic determination of the buckling speed of towed slender cylindrical beams", *ASME, Journal of Energy Resources Technology* , **106**, 246-249.

44. F. Noblesse and G. S. Triantafyllou 1983 "Explicit approximations for the calculation of potential flow about a body", *Journal of Ship Research*, **27**(1), 1-12.

IV. Articles in Conference Proceedings

1. S. Peppas, L. Kaiktsis, G. S. Triantafyllou, 2019 "Computational study of the forces on a cylinder oscillating in a mean flow", *UTAM Symposium "Critical Flow Dynamics involving moving/deformable structures with design applications"*, 18-22 June 2018 in Santorini island, Greece.
2. S. Peppas, L. Kaiktsis, C. Frouzakis, G. S. Triantafyllou, 2016 "Computational Study of Three-Dimensional Flow Past an Oscillating Cylinder: Effects of Oscillation Mode on Flow Structure and Forces", *The 26th International Ocean and Polar Engineering Conference*, Rhodes, Greece.
3. S. Peppas, L. Kaiktsis, C. Frouzakis, G. S. Triantafyllou, 2015 "A Comparison of Forces in Two-and Three-Dimensional Flow Past an Oscillating Cylinder", *ASME 2015 Pressure Vessels and Piping Conference*, V004T04A032-V004T04A032, Boston, Massachusetts.
4. S. Peppas, L. Kaiktsis, and G. S. Triantafyllou, 2013 "Numerical Simulation of Three-Dimensional Flow Past an Oscillating Cylinder", *ASME 2013 Pressure Vessels and Piping Conference*, V004T04A058-V004T04A058, Prague, Czech Republic.
5. H. Zhang, M. S. Triantafyllou, and G. S. Triantafyllou, "Vortex induced vibration analysis (VIVA) using hydrodynamic databases", 2011 *Offshore Mechanics and Arctic Engineering Conference*, Paper, 2011-50192, Rotterdam, The Netherlands.
6. L. Kaiktsis, C. Papadopoulos, and G. S. Triantafyllou, 2011 "POD Analysis of Ordered and Disordered Vortex Wakes in Flow Past an Oscillating Cylinder", ENOC 2011, Rome, Italy.
7. S. Peppas, L. Kaiktsis, and G. S. Triantafyllou, 2010 "The Effect of In-Line Oscillation on the Forces of a Cylinder Vibrating in a Steady Flow", ASME 2010 7th International Symposium on Fluid-Structure Interactions, Flow-Sound Interactions, and Flow-Induced Vibration and Noise, Montreal, Quebec.
8. L. Kaiktsis, and G. S. Triantafyllou, 2010 "Computational study of flow resonances and forces on a cylinder vibrating in-line to a steady flow", *ASME Pressure Vessels and Piping Conference*, PVP2010-26039, Washington, Seattle.
9. P. Perdicaris, L. Kaiktsis, and G. S. Triantafyllou, 2009 "Computational Study of Flow Structure and Forces on a Cylinder Vibrating Transversely and In-Line to a Steady Stream: Effects of Sub-Harmonic Forcing", *ASME Pressure Vessels and Piping Conference*, Prague, Czech Republic.

10. S. Peppas, L. Kaiktsis, and G. S. Triantafyllou, 2007 “Forces on a cylinder following an eight-shaped trajectory”, *6th International Symposium on Bluff Body Wakes*, Rio, Brazil.
11. S. Peppas, L. Kaiktsis, and G. S. Triantafyllou, 2005 “Shear flow past a cylinder”, *5th International Symposium on Bluff Body Wakes*, Santorini, Greece.
12. L. Kaiktsis, G. S. Triantafyllou, and Ozbas, M., 2004 “Forces on a cylinder oscillating transversely in steady flow”, *International Conference on Hydroelasticity*, Paris, France,.
13. D. Tzeranis, E. G. Papadopoulos, and G. S. Triantafyllou, 2003 “On the design of an autonomous underwater fish”, *Proceedings, 11th Mediterranean Conference on Control and Robotics*, Rhodes, Greece.
14. M. S. Triantafyllou, G. S. Triantafyllou, Y. S. Tein, and B. Ambrose, 1999 “Pragmatic riser VIV analysis”, *Offshore Technology Conference*, Houston, Texas.
15. G. S. Triantafyllou, “Vortex-induced vibrations of flexible structures”, 1998 *Proceedings, ASME Summer Meeting*, Washington, D. C.
16. G. S. Triantafyllou, and A.A. Dimas, 1994, “Barotropic/Baroclinic dynamics of large-scale geophysical flows” *Proceedings, 6th International Symposium on the Behaviour of Offshore Structures*, Cambridge, Mass., 359-367.
17. G. S. Triantafyllou, 1992 “Energy and Momentum of hydroelastic waves”, *ASME International Symposium on Flow-Induced Vibrations and Noise*, Anaheim, California.
18. G. S. Triantafyllou, and A.A. Dimas, 1992, “Large-scale vortices in the ocean and upwelling” *Proceedings, 5th International Symposium on the Behaviour of Offshore Structures*, London, UK, Vol. I, 145-154.
19. G. S. Triantafyllou, and G. E. Karniadakis, “The route to turbulence in nominally two-dimensional free shear flows” *8th Symposium on Turbulent Shear Flows*, Volume 1(1), 15-2.
20. A. A. Dimas, and G. S. Triantafyllou, 1992, “Free surface signature of submerged shear flow”, *Proceedings of the second International Offshore and Polar Engineering Conference*, San Francisco, California, Vol. I, 253-261.
21. G. S. Triantafyllou, 1991 “Vortex formation in surface currents”, *Proceedings, First International Conference on Offshore Mechanics and Polar Engineering*, Edinburgh, UK, Vol. III, 309-315.
22. A. A. Dimas and G. S. Triantafyllou, 1991 “Numerical study of shear flow/free surface interactions” *ASME Applied Mechanics Meeting*, Columbus, Ohio, AMD-Vol. 119, 17-29.

23. L. R. Grigg and G. S. Triantafyllou, 1990 "The turbulent wake of three-dimensional bluff objects near a free surface", *Proceedings, First European Offshore Mechanics Symposium*, Trondheim, Norway, 64-67.
24. G. S. Triantafyllou, 1990 "Three-dimensional flow patterns in two-dimensional wakes", *Proceedings, International Symposium on Unsteady Fluid Mechanics*, Toronto, Ontario, AMD-Vol. 92, 395-402.
25. G. S. Triantafyllou and G. E. Karniadakis, 1989 "Forces on a cylinder oscillating in steady cross-flow", *Proceedings, Eighth International Conference on Offshore Mechanics and Arctic Engineering*, The Hague, The Netherlands, Vol. II, 247-252.
26. G. S. Triantafyllou and C. Chrysosostomidis 1987 "The Dynamics of Towed Arrays", *Proceedings, Sixth International Conference on Offshore Mechanics and Arctic Engineering*, Houston, Texas.
27. G. S. Triantafyllou and C. Chrysosostomidis 1985 "Stability of a string in axial flow", *Proceedings, Fourth International Conference on Offshore Mechanics and Arctic Engineering*, Houston, Texas.
28. G. S. Triantafyllou and C. Chrysosostomidis 1984 "Analytic determination of the buckling speed of towed slender cylindrical beams" *Proceedings, Third International Conference on Offshore Mechanics and Arctic Engineering*, New Orleans, Louisiana.

IV. Other Conferences

Over one hundred presentations in conferences, workshops, and society meetings.

Professional work

- Development and use of model and computer code for vibrations of the bottom-hole assembly of drill-strings (1986-87).
- Consultant on Vortex-Induced Vibrations of Cables (1992-96)
- Consultant on the effect of ocean turbulence on offshore structures (2002-Currently)
- Co-Development and use of model and of the computer code "viva" for vortex-induced vibrations of marine risers (1998-Currently).

Administrative work

- *Chairman*, School of Naval Architecture and Marine Engineering, 2011-2013.
- *Vice-Chairman*, School of Naval Architecture and Marine Engineering, 1999-2001, and 2009-2011.
- *Division Chairman*, Division of Hydrodynamics, School of Naval Architecture and Marine Engineering, 2002-2004.