

Name Longbin Tao
Current post Professor of Offshore Engineering
Institution Department of Naval Architecture, Ocean and Marine Engineering, University of Strathclyde
Address Henry Dyer Building, 100 Montrose Street, Glasgow, G4 0LZ, UK
Telephone +44 (0)141 548 3315 **Fax** +44 (0)141 548 3315
E-mail longbin.tao@strath.ac.uk
Research group Ocean Engineering

Employment History

10/2017- **Professor of Offshore Engineering**
Department of Naval Architecture, Ocean and Marine Engineering, University of Strathclyde

2009-2017 **Lloyd's Register Chair Professor of Offshore Engineering**
School of Marine Science and Technology, Newcastle University, UK

2001-2008 **Lecturer, Senior Lecturer of Coastal Engineering**
School of Engineering, Griffith University, Australia

1994-1997 **Naval Architect** SBF Ship Builders, Western Australia, Australia

1988-1994 **Engineer** Maritime Authority, Guangzhou, China

Visiting positions:

07/2014 – Visiting Professor, Harbin Engineering University, China

12/2009 – Visiting Professor, Shanghai Jiao Tong University, China

2009 – 2011 Adjunct Professor, Griffith School of Engineering, Griffith University, Australia

09/ – 11/2008 Senior Visiting Fellow, Institute of Mechanics, Chinese Academy of Science, China

02/ – 06/2005 Visiting Professor, Department of Hydrodynamics, Ecole Centrale Marseille, France

Education

1997-2001 PhD in Offshore Engineering
School of Oil and Gas Engineering, The University of Western Australia
Thesis title Numerical investigation of hydrodynamic heave damping of deep water offshore structures
Collaboration Dept. of Naval Architecture and Marine Engineering, University of Michigan, USA

1985-1988 MEng in Offshore Engineering
Department of Naval Architecture and Ocean Eng, South China University of Technology

1981-1985 BEng in Naval Architecture
Department of Naval Architecture and Ocean Eng, South China University of Technology

Services to Scientific Bodies

Editorial Board

- Associate Editor for Journal of Offshore Mechanics and Arctic Engineering (ASME) 2007-2015
- Associate Editor for Journal of Waterway, Port, Coastal and Ocean Engineering (ASCE) 2014-
- Member of Editorial Board, Ocean Engineering (Elsevier) 2011-
- Member of Editorial Board, Journal of Marine Engineering and Technology (IMarEST) 2012-

Member of International Scientific Committee

- Technical Committee, Lloyd's Register (LR) UK
- Offshore Technology, Offshore Mechanics and Arctic Engineering (OMAE) ASME
- Ocean Engineering, International Towing Tank Conference (ITTC)
- Natural Gas Storage and Transportation, International Ship and Offshore Structures Congress (ISSC)

Peer Review Activities

- In addition to serving editorial board for the above international journals, I have been serving as a regular reviewer of manuscripts for 10+ other major international journals including *Applied Ocean*

Research, Physics of Fluid, J. of Fluids and structures, J. of Hydrology, Coastal Eng., Int J. Num. Methods in Fluids, Ocean Eng., Nonlinear Dynamics, Advances in Water Resources.

- Grant proposal assessor for ARC (Australia), RGC (Hong Kong), EPSRC (RCUK), US-Israel Binational Science Foundation, FCT (Portugal)
- Expert Panel for Academic (PhD) Degree Review (Academic Degrees Committee of the State Council, China)

Served as an Expert Witness in court cases on maritime accidents

Grant Income

Current projects

- Principal investigator on Knowledge Exchange fund, “Hydrodynamic and Mooring Evaluation for Floating Offshore Wind Mooring System Concepts”, UK, 03/2018-04/2019 (£25,640).
- Principal investigator on Knowledge Exchange fund, “Hydrodynamic and mooring analysis for floating regasification and storage unit (FRSU)”, UK, 06/2018-12/2018 (£19,006).
- Principal investigator on Croatian Science Foundation fund, “Wind and Sea Loads on Energy Structures (WESLO)”, UK, 04/2017-03/2021 (€ 40,000).
- Co-investigator on Singapore Economic Development Board & Lloyd’s Register Fund, “Wave breaking and its impact on offshore structures”, 09/2015-08/2019, (SIN\$100,000).

Previous projects

- Principal investigator on ETP Engagement fund, “Axis Tension Buoy for Floating Wind/Wave energy Generation”, UK, 12/2017-07/2018 (£19,491).
- Co-investigator on KTP fund, “Super Duplex weld surface treatment technology to improve corrosion resistance, enhance fatigue life and improve high temperature performance”, UK, 09/2015-08/2017 (£124,000).
- Principal investigator on DHRTC fund, “Breaking waves and impact on fixed offshore structures”, UK, 03/2016-03/2017 (£20,000).
- Principal investigator on RAEng fund, “Impact of extreme nonlinear waves on offshore structures”, UK, 03/2015-03/2016 (£24,000).
- Principal investigator on Sino-UK Higher Education Research Partnership for PhD studies (British Council/Chinese Scholarship Commission), “Freak waves and the impact on deepwater offshore structures”, 12/2012-03/2015, (£36,000 + CHN ¥208,000).
- Principal investigator on RGF, “Offshore Platform Designs for Windfarm Projects (AC and HVDC)”, Regional Growth Fund (RGF), UK, 2013-2014 (£69,478).
- Co-investigator on EPSRC-GLOBAL “Sustainable energy through China-UK research engagement 2012-2013” (£500,000)
- Chief Investigator on ARC (Australian Research Council) Discovery Project 2004-2007 “Coupling models for ocean waves, groundwater and porous seabed interaction” (AU\$365,000)
- Chief Investigator on ARC LIEF Project 2005 “Hydrodynamics and water quality field research facility” (AU\$363,288)
- Chief Investigator on ARC Linkage Project 2003-2005 “Flow generated by ducted surface pumps: buoyant jets at high Reynolds number and low Froude number” (AU\$69,000)
- Chief Investigator on Joint Industry Project 2000-2001 “Numerical and experimental modelling on hydrodynamic responses of a Spar platform for West Africa” (AU\$64,000)

Areas of Specialisation

- Numerical & experimental modelling of hydrodynamics for ships and offshore structures
- Nonlinear wave mechanics
- Computational fluid dynamics
- Fluid – structure interaction
- Offshore renewable energy systems
- Reliability of subsea production systems

Research Student Supervision

I have successfully supervised 10 plus PhD students’ studies to completion, and am currently supervising 3 PhD students and 1 MPhil student as principal supervisor at University of Strathclyde.

Publications and Presentations

60 plus research articles published in international peer-reviewed journals;
40 plus research papers published in conference proceedings;
h-index: 18 (Scopus); 19 (Google Scholars)

Peer-reviewed Journal Publications

1. Gao, S., Tao, L., Tian, X.* and Yang, J.: Flow around an inclined circular disk, *Journal of Fluid Mechanics*, 851, 687-714.
2. Wu, J.M.*, Xu, Y., Tao, L.B., Yu, M., Dou, Y.Z. (2018): An integrated hydrodynamics and control model of a tethered underwater robot, *China Ocean Engineering*, 32(5), 1-13.
3. De Wang Chia*, Longbin Tao, Arun Dev, Xin Wang and Yali Zhang (2018): Experimental research on kinematics of breaking waves, *Journal of Hydrodynamics*, 30 (3), 390-394.
4. Shangmao Ai*, Liping Sun, Longbin Tao (2018): Modeling and Simulation of Deepwater Pipeline S-lay with Coupled Dynamic Positioning, *Journal of Offshore Mechanics and Arctic Engineering, ASME*, 140(5): 051701-051701-8.
5. Gao, S., Tao, L.B., Kou, Y.F.*, Lu, C., Sun, J.L. (2018): Numerical and experimental study on hydrodynamic performance of a novel semi-submersible concept, *China Ocean Engineering*, 32 (2), 144-156.
6. Martin Nuernberg, Longbin Tao* (2018): Experimental Study of Wake Characteristics in Tidal Turbine Arrays *Renewable Energy*, 127, 168-181.
7. Qingkai Zhao, Hang Xu, Longbin Tao* (2018): Nanofluid flow and heat transfer in a microchannel with interfacial electrokinetic effects. *International Journal of Heat and Mass Transfer*, 124, 158-167.
8. X.Y. Cao, F.R. Ming, A.M. Zhang*, L. Tao, (2018): Multi-phase SPH modelling of air effect on the dynamic flooding of a damaged cabin, *Computers and Fluids*, 163, 7-19.
9. Martin Nuernberg and Longbin Tao* (2018): Three-dimensional tidal turbine array simulations using OpenFOAM with dynamic mesh, *Ocean Engineering*, 147, 629-646.
10. Yibo Liang, Longbin Tao*, Mingyue Liu, Longfei Xiao, (2016): Experimental and Numerical Study on Vortex-Induced-Motions of a Deep-Draft Semi-Submersible Concept, *Applied Ocean Research*, 67, 169-187.
11. Yibo Liang and Longbin Tao* (2017): Interaction of vortex shedding processes on the flow over a Deep-Draft Semi-Submersible, *Ocean Engineering*, 141, 427-449.
12. Mingyue Liu, Longfei Xiao*, Yibo Liang, Longbin Tao (2016): Experimental and numerical studies into the pontoon effect on vortex-induced motions of deep-draft semi-submersibles, *Journal of Fluids and Structures*, 72, 59-79.
13. Xinliang Tian, Longfei Xiao, Xiangdong Zhang, Jianmin Yang, Longbin Tao, and Dan Yang (2017): Flow around an oscillating circular disk at low to moderate Reynolds numbers, *Journal of Fluid Mechanics*, 812, pp. 1119-1145.
14. Xinliang Tian, Longbin Tao, Xin Li, Jianmin Yang (2017): Hydrodynamic coefficients of oscillating flat plates at $0.15 \leq KC \leq 3.15$, *Journal of Marine Science and Technology* (doi:10.1007/s00773-016-0401-2).
15. Torres-Lopez, J., Tao, L.*, Xiao, L. and Hu, Z. (2017): Experimental study on the hydrodynamic behaviour of a FPSO in a deepwater region of the Gulf of Mexico, *Ocean Engineering*, 129, 549-566.
16. Longfei Xiao, Haining Lu, Longbin Tao, Lijun Yang (2017): LH-moment estimation for statistical analysis on the wave crest distributions of a deepwater spar platform, *Marine Structures*, 52, 15-33.

17. Qingkai Zhao, Hang Xu, Longbin Tao (2017): Unsteady Bioconvection Squeezing Flow in a Horizontal Channel with Chemical Reaction and Magnetic Field Effects. *Mathematical Problems in Engineering*, 2017, 2541413.
18. Liu, Z., Lin, Z. and Tao, L.* (2016): Nonlinear wave-current interaction in water of finite depth, *Physics of Fluids*, 28 (12) 127104.
19. Ikenna A. Okaro and Longbin Tao* (2016): Reliability analysis and optimisation of subsea compression system facing operational covariate stresses, *Reliability Engineering & System Safety*, 156, 159-174.
20. Liu, Z., Lin, Z., Tao, L.* and Lan, J. (2016): Nonlinear wave-current interaction in water of finite depth, *Journal of Waterway, Port, Coastal and Ocean Engineering*, ASCE, 142 (6), (04016009).
21. Qingkai Zhao, Hang Xu, Longbin Tao, A. Raees, Qiang Sun (2016): Three-dimensional free bioconvection of nanofluid near the stagnation point on a general curved isothermal surface, *Applied Mathematics and Mechanics*, 37 (4), 417-432.
22. Qingkai Zhao, Hang Xu, Longbin Tao (2016): Homogeneous-heterogeneous reactions in boundary-layer flow of a nanofluid near the forward stagnation point of a cylinder, *Journal of Heat Transfer*, ASME, 139 (3) 034502.
23. Longfei Xiao, Haining Lu, Xin Li, Longbin Tao (2016): Probability analysis of wave run-ups and air gap response of a deepwater semi-submersible platform using LH-moments estimation method, *Journal of Waterway, Port, Coastal and Ocean Engineering*, ASCE, 142 (2), (04015019).
24. Lu, W., Yang, J.M., Tao, L. (2016): Numerical study on the energy structure of the super-rogue waves, *Ocean Engineering*, 113, 295-307.
25. Xiao, L.F., Yang, J.M, Peng, T. and Tao, L.* (2016): A free surface interpolation approach for rapid simulation of short waves in meshless numerical wave tank based on the radial basis function, *Journal of Computational Physics*, 307C, 203-224.
26. Xiao, L.F., Kou, Y.F., Tao, L. and Yang, J.M. (2016): A comparative study on hydrodynamic performance of double-layered perforated wall breakwaters attached to a ring-shaped VLFS, *Ocean Engineering*, 111, 279-291.
27. Xiao, L.F., Yang, J.M., Tao, L. and Li, X. (2015): Shallow water effects on high order statistics and probability distributions of wave run-ups along FPSO broadside, *Marine Structures*, 41, 1-19.
28. Lin, Z., Tao, L.*, Pu, Y. and Murphy, AJ (2014): Fully nonlinear solution of bi-chromatic deepwater waves, *Ocean Engineering*, 91, 290-299.
29. Xiao, L.F., Tao, L.*, Yang, J.M. and Li, X. (2014): An experimental investigation on wave run-up along the broadside of a single point moored FPSO exposed to oblique waves, *Ocean Engineering*, 88, 81-90.
30. Zhao, W., Yang, J., Hu, Z. and Tao, L. (2014): Coupled analysis of nonlinear sloshing and ship motions, *Applied Ocean Research* 47, 85-97.
31. Zhao, W., Yang, J., Hu, Z., Xiao, L. and Tao, L. (2014): Hydrodynamics of a 2D vessel including internal sloshing flows, *Ocean Engineering*, 84, 45-53.
32. Qiu, W., Junior, J., Lee, D. Lie, H., Magarovskii, V., Mikami, T., Rousset, J.M., Sphaier, S., Tao, L. and Wang, X. (2014): Uncertainties related to predictions of loads and responses for ocean and offshore structures, *Ocean Engineering* 86, 58-67.
33. Zhao, W., Yang, J., Hu, Z. and Tao, L. (2014): Prediction of hydrodynamic performance of an FLNG system in side by side offloading operation, *Journal of Fluids and Structures* 46, 89-110.
34. Zhao, W., Yang, J., Hu, Z. and Tao, L. (2014): Coupling between roll motions of an FLNG vessel and internal sloshing, *Journal of Offshore Mechanics and Arctic Engineering*, ASME, 136(2).
35. Song, H., Tao, Longbin* and Chakrabarti, S.K. (2010): Modelling of water wave interaction with multiple cylinders of arbitrary shape, *Journal of Computational Physics*, 229 (5), 1498-1513.

36. Song, Hao and Tao, Longbin* (2010): An efficient scaled boundary FEM model for wave interaction with a nonuniform porous cylinder. *International Journal for Numerical Methods in Fluids*, 63 (1), 96-118.
37. Tao, Longbin*, Song, Hao and Chakrabarti, S.K. (2009): Wave interaction with a perforated circular breakwater of non-uniform porosity. *Journal of Engineering Mathematics*, 65 (3), 257-271.
38. Tao, Longbin*, Song, Hao and Chakrabarti, S.K. (2009): Scaled boundary FEM model for interaction of short-crested waves with a concentric porous cylindrical structure, *Journal of Waterway, Port, Coastal and Ocean Engineering*, ASCE, 135 (5), 200-212.
39. Song, Hao and Tao, Longbin (2009): Periodic wave solution of a second order nonlinear ordinary differential equation by Homotopy analysis method, *ANZIAM Journal*, 51(SUPPL), C109-C123.
40. Song, Hao and Tao, Longbin (2009): Semi-analytical solution of Poisson's equation in bounded domain, *ANZIAM Journal*, 51(SUPPL), C169-C185.
41. Cirella, Giuseppe and Tao, Longbin (2009): The Missing Bottom Line, *DESIGN PRINCIPLES and PRACTICES: An International Journal*, 3 (1), 197 - 212.
42. Cirella, Giuseppe and Tao, Longbin (2009): An adaptive quantitative method to measure sustainability: An application for the state of Queensland, Australia, *International Journal of Environmental, Cultural, Economic & Social Sustainability*, 5 (1), 127-140.
43. Tao, L.* and Dray, D. (2008): Hydrodynamic performance of solid and porous heave plates. *Ocean Engineering*, 35(10), 1006-1014.
44. Cirella, Giuseppe and Tao, Longbin (2008): Measuring sustainability: An Application using the Index of Sustainable Functionality in South East Queensland, Australia. *The International Journal of Interdisciplinary Social Sciences*, 3 (8), 231-240.
45. Tao, Longbin and Song, Hao (2008): Solving water wave diffraction by an elliptic cylinder using scaled boundary finite element method, *ANZIAM Journal*, 50(SUPPL), C474-C489.
46. Song, Hao and Tao, Longbin (2008): Soliton solutions for Korteweg-de Vries equation by homotopy analysis method, *ANZIAM Journal*, 50(SUPPL), C152-165.
47. Song, H. and Tao, L.* (2007): Short-crested wave interaction with a concentric porous cylindrical structure. *Applied Ocean Research*, 29 (4), 199-209.
48. Tao, L.*, Molin, B., Scolan, Y.-M. and Thiagarajan, K. (2007): Spacing effects of heave plates on hydrodynamics of offshore structures. *Journal of Fluids and Structures*, 23(8), 1119-1136.
49. Tao, L.*, Song, H. and Chakrabarti, S. (2007): A new analytical solution of nonlinear progressive waves in water of finite depth. *Coastal Engineering*, 54(11), 825-834.
50. Tao, L.*, Song, H. and Chakrabarti, S.K. (2007): Scaled boundary FEM solution of short-crested wave diffraction by a vertical cylinder, *Computer Methods in Applied Mechanics and Engineering*, 197(1-4), 232-242.
51. Cirella, G., Tao, L. and Mohamed, S. (2007): An adaptive, quantitative method to measure sustainability: An application of the Gold Coast, Australia, *Journal of Coastal Research*, SI 50, 52-56.
52. Song, H. and Tao, L. (2007): Homotopy analysis of 1D unsteady, nonlinear groundwater flow through porous media, *Journal of Coastal Research*, SI 50, 292-296.
53. Liu, C. and Tao, L. (2007): Two-dimensional digital particle tracking velocimetry algorithm based on the image of particle trace, *Journal of Coastal Research*, SI 50, 415-419.
54. Liu, C., Huhe, A. and Tao, L. (2007): Experiment Study on sediment incipience in backward-facing step flow, *Journal of Hydrodynamics*, 19(2), 173-179.
55. Tao, L.: Viscous damping of deepwater of TLP and SPAR (2006). *Journal of Shipbuilding of China* (in Chinese), 47(2), 17-23.
56. Cartwright, N., Baldock, T., Nielsen, P., Jeng, D.-S. and Tao, L. (2006): Swash-aquifer interaction in the vicinity of the water table exit point. *Journal of Geophysical Research – Oceans*, 111, C09035,

doi:10.1029/2005JC003149.

57. Liu, C., Huhe, A. and Tao, L. (2006): Sediment incipience in turbulence generated in a square tank by a vertically oscillating grid, *Journal of Coastal Research*, SI 39, 465-468.
58. Wu, S. and Tao, L. (2006): 3D numerical modelling of pollution dispersion in harbour. *Journal of Coastal Research*, SI 39, 1578-1581.
59. Wu, X., Tao, L.* and Li, Yuanlin (2005): Nonlinear ship roll damping in regular and irregular waves. *Journal of Offshore Mechanics and Arctic Engineering*, ASME 127 (3), 205-211.
60. Tao, L. and Cai, S. (2004): Heave motion suppression of a Spar with a heave plate. *Ocean Engineering*, 31 (5-6), 669-692.
61. Tao, L., Lim K. Y. and Thiagarajan, K. (2004): Heave response of a classic spar with variable geometry. *Journal of Offshore Mechanics and Arctic Engineering*, ASME, 126 (1), 90-95.
62. Tao, L. and Thiagarajan, K. (2003): Low KC flow regimes of oscillating sharp edges, Part I: Vortex shedding observation. *Applied Ocean Research*, 25 (1), 21-35.
63. Tao, L. and Thiagarajan, K. (2003): Low KC flow regimes of oscillating sharp edges, Part II: Hydrodynamic force coefficients. *Applied Ocean Research*, 25 (2), 53-62.
64. Tao, L., Thiagarajan, K. and Cheng, L. (2000): On the parametric dependence of Springing Damping of TLP and Spar Columns. *Applied Ocean Research*, 22 (5), 281-294.