CURRICULUM VITAE: DR. XU XIANG

Personal Information

Name:	Xu Xiang
Nationality:	[redacted]
Qualifications:	PhD in Marine Hydrodynamics, Norwegian Centre of Excellence: Centre for Ships and Ocean Structures, Norwegian University of Technology and Science (NTNU) Msc. in Fluid Mechanics, China Ship Research and Development Academy BEng. in Naval Architecture and Marine Engineering, Harbin Engineering University
Professional Affiliations:	The Norwegian Society of Graduate Technical and Scientific Professionals (Tekna) The American Society of Mechanical Engineers (ASME) Chinese Society of Naval Architects and Marine Engineers (CSNAME)

Employment History

09.2015 – Present **Statens vegvesen (Norwegian Public Roads Administration)**

Senior Engineer Hydrodynamics

Coastal highway E39 ferry-free project:

· Solve technological challenges and develop alternative concepts for crossing the wide (a few km) and deep fjords (up to 1.3 km);

· Transferring of offshore oil and gas technologies to develop floating bridges, submerged floating tunnels, etc.

1. Bridge concepts development and follow up;
2. Hydrodynamic optimization of floaters based on bridge design requirements;
3. Global bridge response due to ship collision etc;
4. Hydrodynamic issues on submerged floating tunnels;
5. Passing ship effects on waterway structures;
6. Research projects follow up at NTNU, PhD student co-supervisor;
7. Master student co-supervisor at Denmark Technical University;

10.2013 – 09.2015 **Global Maritime**

Senior Engineer Hydrodynamics

1. Vessel motions, sealoads analysis,eg. motion responses, global analysis;
2. Mooring analysis at open sea or quayside; Riser analysis;
3. Marine operations, warranty projects document review;
4. DP capability, collision risk analysis during drift off/drive off;
5. Subsea lifting analysis through splash zone;
6. Hydrodynamics analysis and optimization of Semi-sub platforms;
7. Internal training regarding SESAM package.

09.2011 – 10.2013 **DNV.GL Software**

Senior Engineer Floating Structures

Provide SESAM technical support and training for important players in the offshore, oil and gas industry on a daily and project basis; Emphasis on SURF and hydrodynamics analysis.
User courses regarding Sesam products around the world:
1. Hydrostatic/Hydrodynamic analysis of offshore floaters (HydroD / Wadam / Wasim);
2. Complex marine operations (Simo / SIMA);
3. Mooring analysis (MIMOSA);
4. Coupled motion analysis of floater with mooring lines and risers (DeepC / Simo / Riflex);
5. Jacket installation analysis (InstallJac);
6. Pipeline tools course (StableLines / FatFree / OS-F101 / PET).

Acceptance testing lead:
DeepC, Riflex, SIMO, MIMOSA, Pipeline Engineering Tools.

08.2007 – 09.2011 **Centre for Ships and Ocean Structures, NTNU**

Research Fellow in Marine Hydrodynamics, Ship Technology

Manoeuvring of Two Interacting Ships in Waves
I have developed hydrodynamic solvers for hydrodynamic loads on two interacting ships in both calm water and waves. Solutions are based on 3-D potential flow and BEM method was used. Codes were validated by both theories and model tests. Further implementation of the hydrodynamic solvers was to be integrated to simulate the complex marine operation of two vessels advancing in calm water or waves. Ship resistance and propulsion modules were included based on empirical and database methods. A PID based autopilot was also implemented to control the vessels fulfilling the operation requirements. Thus the combined seakeeping and manoeuvring model has been extended to two interacting vessels in a seaway for the first time.

07.2003 – 08.2007 **China Shipbuilding Industry Corporation**

Naval Architect at the Chinese State Ship Model Basin

Model tests and data analysis, report; Hydrodynamics analysis of ships and offshore structures; In-house analysis tools development; Business development assistant.
Selected projects:
1. FPSO Tow Test in Waves (ConocoPhillips - Hai Yang Shi You 117): Model test project manager
2. DPV7500C Deepwater Pipelay and Lift Vessel Seakeeping Test (CNOOC - Hai Yang Shi You 201): Model test project manager
3. Model tests on motions of a small vessel passing/approaching a large ship in waves for MARIC
4. Development of a 3-D potential code for seakeeping analysis of two vessels accounting for interaction effects, validation by model tests and against BV HydroStar
5. Model test of a full scale rescue grid under seastates
6. Seakeeping analysis of SDA (Shanghai Design Associates) shallow water pipelay vessel
7. Seakeeping analysis of a Manned Deep-submergence Vehicle (the Chinese JiaoLong) at free surface
8. Seakeeping analysis of a Single Column TLP for South China Sea
9. Feasibility Study team member on China's next generation ultra-deep ocean basin (task: sizing)
10. Model tests on seakeeping of various ships and offshore structures
11. Model tests on manoeuvrability of various ships
12. Development of a 2-D program for hydrodynamic coefficients of 2-D sections of various shapes

Other skills

Certificates:

1. Certified Computer Software Programmer (C), Ministry of Industry and Information Technology of the P.R. China (2002)
2. Certified ship seakeeping/maneuverability tester, Ship Overall Performance Test Centre of China Shipbuilding Industry Corporation (2005)

Courses:

1. 2016, Bridge Engineering Handbook H400, Vegdirektoratet, Norwegian Public Roads Administration;
2. 2011-2013, Sesam courses, DNV Software (Sesam GeniE, Sesam HydroD, Sesam DeepC, MIMOSA, Sesam Marine and Sesam Pipeline);
3. 2012, Pipeline Design courses, DNV Academy (Pipeline system overview, On-bottom stability, Fatigue of free-spanning pipelines);
4. 2012, Train The Trainer course, DNV Academy;
5. 2006, Operation of segemented wavemaker, China Ship Scientific Research Centre;
6. 2004, Compulsory courses for seakeeping and maneuverability model testers, China Ship Scientific Research Centre.

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Publications:

1. **Xiang, X.** (2017) Simplified hydrodynamic calculation of a Submerged Floating Tube Bridge across the Digernessund. Proceedings of OMAE2017, the 36th International Conference on Ocean, Offshore and Arctic Engineering, Trondheim, Norway. (**Accepted**)
2. **Xiang, X.** (2017) viscous damping modelling of floating bridge pontoons with heaving skirt and its impact on predicting girder bending moments. Proceedings of OMAE2017, the 36th International Conference on Ocean, Offshore and Arctic Engineering, Trondheim, Norway. (**Accepted**)
3. **Xiang, X.** (2017) Global Analysis of Submerged Floating Tube Bridge: A Case Design Study for the Crossing of Bjørnefjorden in Norway. World Tunnel Congress 2017, Bergen, Norway. (**Accepted**)
4. **Xiang, X.,** Eidem, M.E., Sekse, J.H., and Minoretti, M. (2016) Hydrodynamic Loads on a Submerged Floating Tunnel Bridge Induced by a Passing Ship or Two Ships in Maneuver In calm water, OMAE2016-54030. Proceedings of OMAE2016, the 35th International Conference on Ocean, Offshore and Arctic Engineering, Busan, South Korea.
5. **Xiang, X.** (2012) Maneuvering of two interacting ships in waves. Doctoral thesis at Department of Marine Technology, Norwegian University of Science and Technology, ISBN: 978-82-471-4052-9, h.
6. **Xiang, X.,** Faltinsen, O.M. (2012) Non-lifting Hydrodynamic Interaction Forces between Two Ships Undergoing Arbitrary Horizontal Motions in Calm Water. The International Symposium on Marine Hydrodynamics, China Ship Scientific Research Centre, Wuxi, China.
7. **Xiang, X.,** Faltinsen, O.M. (2011) Maneuvering of two interacting ships in calm water. The SOBENA journal Marine Systems & Ocean Technology (MS&OT), November.
8. **Xiang, X.,** Faltinsen, O.M. (2011) Time domain simulation of two interacting ships advancing parallel in waves, OMAE2011-49484. Proceedings of OMAE2011, the 30th International Conference on Ocean, Offshore and Arctic Engineering, Rotterdam, the Netherland.
9. **Xiang, X.,** Skejic, R., Faltinsen, O.M. and Berg, T.E. (2011) Hydrodynamic interaction loads between two ships during lightering operation in calm water. The 2nd Intl' Conference on ship maneuvering in shallow and confined water: Ship-Ship Interaction, 2011, Trondheim, Norway.
10. **Xiang, X.,** Faltinsen, O.M. (2010) Maneuvering of two Interacting Ships in Calm Water. Proceedings of PRADS2010, the 11th International Symposium on Practical Design of Ships and other Floating Structures. September, Rio de Janeiro, Brazil.
11. **Xiang, X.,** Miao, Q.M., Chen, X.B. (2007) "Study on Coupled Motion Response and Relative Motion between Two Side-by-side Ships in Waves." In: The Asialink-EAMARNET International Conference on Ship Design, Production and Operation, Journal of China Shipbuilding, English Edition.
12. **Xiang, X.,** Miao, Q.M., Chen, X.B., Kuang, X.F. (2007), "Validation on Coupled Motion Responses of Two Interacting Ships in Waves." In: The 5th International Workshop on Ship Hydrodynamics, September, Zhenjiang, China.
13. Eidem, M.E., Minoretti, M., **Xiang, X.** and Fjeld, A. (2017) Basic design for a Submerged Floating Tube Bridge across the Digernessundet. 39th IABSE Symposium – Engineering the Future, September 21-23 2017, Vancouver, Canada. (**Accepted**)
14. Viuff, T.H, Leira, B.J., Øiseth, O., **Xiang, X. (2016)** Dynamic Response of a Floating Bridge Structure, 19th IABSE Congress Stockholm, Challenges in Design and Construction of an Innovative and Sustainable Built Environment.
15. Viuff, T.H, Leira, B.J., **Xiang, X.,** Øiseth, O. **(2016)** Methods for preliminary analysis of floating bridge structures, PRADS 2016, Copenhagen, Denmark.

16. Yang, H., Wu, B.S., Miao, Q.M., **Xiang, X.,** Berg, T.E., and Kuang, X.F. (2011) Study on the Effects of Unsteady Ship to Ship Interaction by CFD Method. The 2nd Intl' Conference on ship maneuvering in shallow and confined water: Ship-Ship Interaction, 2011, Trondheim, Norway.
17. Kuang, X.F., Miao, Q.M., Zhou, D.C., **Xiang, X.** (2007) Model Test on Seakeeping Prediction of Underway Replenishment of Two Vessels in Waves. In: The Proceedings of Annual Chinese Ocean Engineering Conference, in Chinese.
18. Lan, B., Miao, Q.M., Hu, D.J., **Xiang, X.** (2007) Experimental Study on Different Wave Damping Devices for a Water Flume. In: The Proceedings of the Thirteenth Chinese Offshore and Coastal Engineering Conference,
19. Kuang, X.F., Wang, Y., Miao, Q.M., Feng, X.Z., Jiang, Q.Q., **Xiang, X.** (2006) Theory prediction of wave forces on a submerged body. Journal of Ship Mechanics, in Chinese.
20. Jiang, Q.Q., Feng, X.Z, Miao, Q.M., Kuang, X.F., **Xiang, X.** (2006) Seakeeping theory prediction of nuclear power submarine, Journal of Ship Mechanics.
21. Kuang, X.F., Miao, Q.M., **Xiang, X.** (2005) Numerical Seakeeping Prediction of Underway Replenishment of Two Vessels in Waves. In: The Proceedings of Annual Chinese Ocean Engineering Conference, in Chinese.