Xiaojia Wang

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Education

Purdue University, West Lafayette **Aug. 2018 – Aug. 2022 (Expected)**
Ph.D. in Mechanical Engineering *GPA: 4.0/4.0* *Advisor: Ivan C. Christov*

Shanghai Jiao Tong University, China **Sept. 2015 – Mar. 2018**
M.S. in Naval Architecture and Ocean Engineering *GPA: 3.64/4.0* *Advisor: Renchuan Zhu*

Tianjin University, China **Sept. 2011 – Jun. 2015**
B.S. in Ocean and Naval Engineering *GPA: 3.86/4.0*
Minor in English Literature

Research Interests

Fluid mechanics | Microfluidics | Fluid–structure interactions | Hydrodynamic stability | Scientific computing | Mathematical modeling

Awards and Honors

- **Conference Travel Grant** from the College of Engineering, Purdue University, 2021.
- **Rising Stars in Mechanical Engineering,** 2021. Selected as one of the (around) 30 participants in the United States attending the Academic Career Workshop for Women in Mechanical Engineering at Massachusetts Institute of Technology, Cambridge, MA.
- **Ross Fellowship** from The Graduate School at Purdue University, 2018
- **Second Prize** in China Post-Graduate Mathematical Contest in Modeling, 2017
- **First-class Academic Scholarship** from Shanghai Jiao Tong Univeristy, 2015
- **Puxin Environmental Protection Scholarship** from Puxin Co. Ltd, 2015
- **CCS scholarship** at Tianjin University, 2012, 2013
- **Three A's Student** at Tianjin University, 2012 – 2015

Publications

Google Scholar

In Refereed Journals:

1. **X Wang**, IC Christov, Reduced modeling and global instability of finite-Reynolds-number flow in compliant rectangular channels, preprint.

2. **X Wang**, IC Christov, Reduced models of unidirectional flows in compliant rectangular ducts at finite Reynolds number, *Physics of Fluids*, 33(10):102004, 2021.

   ☞ Featured Article. Contribution to the special issue Tribute to Frank M. White on his 88th Anniversary.

3. TC Inamdar, **X Wang**, IC Christov, Unsteady fluid-structure interactions in a soft-walled microchannel: A one-dimensional lubrication model for finite Reynolds number, *Physical Review Fluids*, 5(06): 064101, 2020.

4. Q Xiao, R Zhu, S Huang, **X Wang**, Responses of ship motion to nonlinear focusing waves based on high-order spectral method, *Shipbuilding of China*, 61(01): 50-59, 2020. (In Chinese)

5. **X Wang**, IC Christov, Theory of the flow-induced deformation of shallow compliant microchannels with thick walls, *Proceedings of the Royal Society A*, 475(2231): 20190513, 2019.

6. H Cai, R Zhu, **X Wang**, J Fan, Dynamic response analysis of floating offshore wind turbine in combined wind and wave, *Journal of Harbin Engineering University*, 40(01): 118-125, 2019. (In Chinese)

7. **X Wang**, R Zhu, L Hong, Kramers–Kronig relations and frequency to time-domain transformation method for time domain calculation of floating body with forward speed, *Shipbuilding of China*, 59(2): 9-15, 2018. (In Chinese)

In Conference Proceedings:

- **X Wang**, IC Christov, Soft hydraulics in channels with thick walls: The finite-Reynolds-number base state and its stability, *AIP Conference Proceedings*, 2302: 020002, 2020.
- **X Wang**, R Zhu, L Hong, 'Time domain calculation of floating body with forward speed in waves and derivation and validation for unified expressions of Kramers–Kronig relations, *Proceedings of the 14th National Congress on Hydrodynamics and the 28th National Conference on Hydrodynamics*, 2017. (In Chinese)

Selected Conference Presentations

- **X Wang**, IC Christov, Reduced models for analyzing flow instability in compliant rectangular microchannels, The 74th Annual Meeting of the APS DFD, Phoenix, USA, 2021.
- **X Wang**, IC Christov, Modeling and stability in compliant microchannels, SPARC Workshop on Fluidics involving deformable interfaces, virtual, 2021.
- **X Wang**, IC Christov, Theory of the bulging effect of soft microchannels with thick walls, The 72nd Annual Meeting of the APS DFD, Seattle, USA, 2019.
- **X Wang**, R Zhu, L Hong, Time domain calculation of floating body with forward speed in waves and derivation and validation for unified expressions of Kramers–Kronig relations, The 28th National Conference on Hydrodynamics, Changchun, China, 2017.

Related Coursework

- ME509: Intermediate Fluid Mechanics, A
- ME610: Boundary Layer Theory, A+
- ME612: Continuum Mechanics, A
- ME614: Computational Fluid Dynamics, A+
- MA615: Numerical Methods for Partial Differential Equations, A+
- MA597: Spectral Method for Computational Fluid Dynamics, A
- ME697: Computational Methods for Interface Dynamics, A+

Leadership and Service

Research Mentor, Purdue University **Spring 2021 – Present**

- Advised a Purdue Mechanical Engineering master student, Shrihari Pande, performing an independent study on **modeling and numerical simulations of oscillatory flows in a compliant tube.**
- Advised a Purdue Mechanical Engineering undergraduate student, Shrihari Pande, performing an independent study on **modeling and stability in compliant rectangular microchannels**.
- Prepared educational learning materials (references, codes, etc.). Supervised progress on research.

Teaching Assistant, Shanghai Jiao Tong University **Sept. 2016 – Jun. 2017**

- Affiliated in School of SJTU-Paris Tech Elite Institute of Technology.
- Responsible for lab preparation and cleaning.

Student Volunteer **Jul. 2016**

- In 2016 International Summer School on Naval Architecture, Ocean Engineering and Mechanics at Shanghai Jiao Tong University.
- Assisted in organizing seminars.
- Provided guidance for international speakers.

Teaching assistant, Shanghai Jiao Tong University **Mar. 2016 – Jun. 2016**

- Course: *Potential theory of ship motion in waves.*
- Translated learning materials into English and disseminated with international students.

Member of Summer Practice Team, Tianjin University **Jul. 2013**

- Investigated the state of education in the northwestern part of China.
- Taught English for students from the first to the third grade in Lan Lian Primary School, Gansu Province, China.

Professional Development

- The 2021 SES (Virtual) Month: Mechanics Matters, virtual, Oct. 15, 2021. Participated in the online poster session, presenting **Dancing microchannels: Reduced models for unsteady fluid–structure interactions at the microscale**.
- XSEDE HPC Workshop Summer Boot Camp, virtual, Jun. 8–11, 2021.
- Six-week short course on *Intermediate Pronunciation and Prosody*, Purdue Language and Cultural Exchange, Aug. 31– Oct. 07, 2020.
- Mathematical Fluids, Materials and Biology Workshop, Ann Arbor, USA, Jun. 13–15, 2019. Participated in poster session, presenting **Towards a theory of fluid–structure interaction due to internal flow in deformable microchannels**.
- The 45th Midwest Universities Fluid Mechanics Retreat (MUFMECH 2019), Rochester, Indiana, USA, Apr. 11–13, 2019.
- Software Carpentry Workshop, Purdue University, Oct. 8–10, 2018.
- Summer internship at Hudong-Zhonghua Shanghai Shipyard, Shanghai, China, Jul. 2014.