

# Jiaxuan Li

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## Profile

Ph. D. candidate with an educational background in fluid mechanics from University of Science and Technology of China (USTC). Have an interest in theoretical and experimental investigations on Richtmyer-Meshkov instability (RMI). Proposed a new interface formation method for shock-interface interaction studies by using the super-hydrophobic-oleophobic surface to constrain the soap-film interface. Experienced in investigating the effects of compressibility, mode coupling and convergent geometry on RMI at a heavy/light interface.

## Education

( 2023 autumn - 2026 spring )



**Ph. D. Candidate in Fluid Mechanics :**

**Specialization:** RMI - Focus on analytical and experimental investigations on RMI at a heavy/light interface.

**Location:** USTC

**Supervisor:** Prof. Xisheng Luo  & Prof. Zhigang Zhai 

Conversion from Master to Ph. D.

( 2021 autumn - 2023 spring )



**Master in Fluid Mechanics :**

**Specialization:** RMI - Focus on interface formation method.

**Specialized basic courses:** (Average score: 95.00)

Non-viscous Flow and Shock waves, Advanced Applied Mathematics,

Computational Fluid Mechanics, Advanced Fluid Mechanics

**GPA:** 4.00/4.30 (<sup>47</sup>/<sub>45</sub> credits)

**Location:** USTC

( 2017 autumn - 2021 spring )



**Bachelor in Theoretical and Applied Mechanics:**

**GPA:** 3.62/4.30 (<sup>170.5</sup>/<sub>160</sub> credits)

**Location:** USTC

## Work experience

( 2024 October - 2025 May )



**Research Administrative Assistant:**

Working on RMI induced by a sinusoidal perturbed shock through theoretical modelling and numerical simulations.

**Location:** Hong Kong Polytechnic University

( 2019 autumn - 2020 spring )



**Teaching Assistant:**

Elementary Fluid Mechanics

Fundamentals of Gasdynamics (EN) (**Outstanding TA Award**)

**Location:** USTC

## Languages

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- Chinese: Primary language
- English: Secondary language, fluent

## Publications

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### Articles:

1. **Jiaxuan Li**, Qing Cao, He Wang, Zhigang Zhai, Xisheng Luo. New interface formation method for shock–interface interaction studies, *Exp. Fluids*, 64(11): 170, 2023. <http://www.doi.org/10.1007/s00348-023-03710-y>
2. **Jiaxuan Li**, Chenren Chen, Zhigang Zhai, Xisheng Luo. Asymptotic matching modal theory and experiments on Richtmyer–Meshkov instability. *J. Fluid Mech.*, 1002, A16, 2025. <http://www.doi.org/10.1017/jfm.2024.1125>
3. **Jiaxuan Li**, He Wang, Zhigang Zhai, Xisheng Luo. Richtmyer–Meshkov instability of a single-mode heavy–light interface in cylindrical geometry, *Phys. Fluids*, 35, 106112, 2023. <http://www.doi.org/10.1063/5.0207779>
4. **Jiaxuan Li**, Chenren Chen, Zhigang Zhai, Xisheng Luo. Effects of compressibility on Richtmyer–Meshkov instability of heavy/light interface. *Phys. Fluids*, 36, 056104, 2024. <http://www.doi.org/10.1063/5.0167248>
5. Qing Cao, **Jiaxuan Li**, He Wang, Zhigang Zhai, Xisheng Luo. Coupled Richtmyer–Meshkov and Kelvin–Helmholtz instability on a shock-accelerated inclined single-mode interface, *J. Fluid. Mech.*, 996, A37, 2024. <http://www.doi.org/10.1017/jfm.2024.710>
6. Chenren Chen, **Jiaxuan Li**, He Wang, Zhigang Zhai, Xisheng Luo. Effects of disturbed transmitted shock and interface coupling on heavy gas layer evolution, *Phys. Fluids*, 36, 086108, 2024. <http://www.doi.org/10.1063/5.0215839>
7. Chenren Chen, **Jiaxuan Li**, He Wang, Zhigang Zhai, and Xisheng Luo. Attenuation of Richtmyer–Meshkov instability growth of fluid layer via double shock, *Sci. China-Phys. Mech. Astron.* 68, 244711, 2025. <http://www.doi.org/10.1007/s11433-024-2592-5>
8. **Jiaxuan Li**, Zhigang Zhai. Modelling and mechanism of non-standard Richtmyer–Meshkov instability, under review

### Conferences:

1. **Jiaxuan Li**, He Wang, Zhigang Zhai, Xisheng Luo. Convergent Richtmyer–Meshkov instability on a heavy/light interface. The 34<sup>th</sup> International Symposium on Shock Waves, 2023, Korea.
2. **Jiaxuan Li**, Chenren Chen, Zhigang Zhai, Xisheng Luo. On mode coupling of RM instability at a heavy/light interface. The 21<sup>st</sup> Chinese National Conference on Shock Waves and Shock Tubes, 2024, Taiyuan, Shanxi, China. (**Excellent paper award**)
3. **Jiaxuan Li**, Zhigang Zhai, Chih-yung Wen, Xisheng Luo. Analytical and numerical investigations on non-standard RMI attenuation at a heavy/light interface. The 35<sup>th</sup> International Symposium on Shock Waves, 2025, Australia.

## Other Skills

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Skilled operation of common office software;  
Skilled application of scientific computing software such as Matlab, Mathematica;  
Skilled use of Origin, Tecplot and other data processing software; operation of LaTeX;  
Skilled in schlieren and shock tube experiments.