

Zhuoyuan Li

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🏠 zyli.github.io

Institute for Functional Intelligent Materials
National University of Singapore

Education

2020–2025 **Ph.D.**, School of Mathematical Sciences, Peking University, Beijing, China
co-supervisors: Prof. Pingwen Zhang¹, Prof. Bin Dong²
2016–2020 **B.Sc.**, School of Mathematics, Sichuan University, Chengdu, China

Working Experience

2025–present Research Fellow Institute for Functional Intelligent Materials
National University of Singapore, Singapore

Research Experience

2022–present deep learning in data assimilation
2020–2022 deep learning in numerical weather prediction

Publications

🔗 [Google Scholar](#)

† → Equal contribution; * → Corresponding author(s)

Journal Articles

- J1. **Zhuoyuan Li**, Dong*, B. & Zhang*, P. State-observation augmented diffusion model for nonlinear assimilation with unknown dynamics. *Journal of Computational Physics* **539**, 114240. ISSN: 0021-9991. <https://doi.org/10.1016/j.jcp.2025.114240> (2025).
- J2. **Zhuoyuan Li***, Dong, B. & Zhang, P. Latent assimilation with implicit neural representations for unknown dynamics. *Journal of Computational Physics* **506**, 112953. ISSN: 0021-9991. <https://doi.org/10.1016/j.jcp.2024.112953> (2024).

¹homepage: <https://www.math.pku.edu.cn/pzhang/en/>

²homepage: <http://faculty.bicmr.pku.edu.cn/~dongbin/>

Peer-reviewed Conference Proceedings

- C1. Yang[†], P., Feng[†], Y., Chen[†], Z., Wu, Y. & **Zhuoyuan Li**^{*}. *Spend Wisely: Maximizing Post-Training Gains in Iterative Synthetic Data Bootstrapping* in *Advances in Neural Information Processing Systems* **38** (2025). <https://arxiv.org/abs/2501.18962>.

Preprints

- P1. Huang[†], X., **Zhuoyuan Li**[†], Z., Liu, H., Wang, Z., Zhou, H., Dong^{*}, B. & Hua, B. Learning to simulate partially known spatio-temporal dynamics with trainable difference operators. *arXiv preprint arXiv:2307.14395*. <https://arxiv.org/abs/2307.14395> (2023).

Talks

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|------------|------------------|---------------------------------------------------------------------------------------------------|
| CSIAM 2024 | Oct. 24-27, 2024 | “Latent assimilation with implicit neural representations for unknown dynamics” (Selected Poster) |
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Teaching

Peking University

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|-------------|------------------------------------------------------------|
| Spring 2023 | Assistant Instructor, Advanced Algebra (II) |
| Fall 2022 | Assistant Instructor, Advanced Algebra (I) |
| Spring 2022 | Assistant Instructor, Advanced Algebra (II) |
| Fall 2020 | Teaching Assistant ³ , Advanced Mathematics (C) |

Please see my homepage for more details.

Other Experience

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| May 2024 | China Meteorological Administration Tornado Key Laboratory (link , in Chinese)
– location: Foshan, Guangdong, China
– deploy a CNN-based model for tornado detection and classification |
| Summer 2018 | research internship organized by MITACS
– location: University of Alberta, Edmonton, AB, Canada
– topic: multi-marginal optimal transport (advisor: Prof. Brendan Pass) |

Last updated: September 18, 2025

³without teaching tasks