Caifeng Zou

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website

Seismological Laboratory
California Institute of Technology
1200 E. California Blvd., Pasadena, CA 91125

EDUCATION

California Institute of Technology 2022 –
Ph.D. Geophysics (Minor in Computational Science and Engineering)
Advisors: Zachary E. Ross & Robert W. Clayton

Imperial College London 2021 – 2022
M.Sc. Applied Computational Science and Engineering
Grade: Distinction

Tongji University 2016 – 2020
B.Sc. Geophysics
GPA: 94.32%

PUBLICATIONS

1. Kong, Q., **Zou, C.**, Choi, Y., Matzel, E. M., Azizzadenesheli, K., Ross, Z. E., Rodgers, A. J., & Clayton, R. W. (2026). Reducing Frequency Bias of Fourier Neural Operators in 3D Seismic Wavefield Simulations through Multistage Training. *Seismological Research Letters, 97*(1), 272-282.

2. **Zou, C.**, Ross, Z. E., Clayton, R. W., Lin, F. C., & Azizzadenesheli, K. (2025). Ambient Noise Full Waveform Inversion with Neural Operators. *Journal of Geophysical Research: Solid Earth, 130*(11), e2025JB031624.

3. **Zou, C.**, & Clayton, R. W. (2025). Imaging the Northern Los Angeles Basins with Autocorrelations. *Seismological Research Letters, 96*(3), 1791-1801.

4. Zheng, H., Chu, W., Zhang, B., Wu, Z., Wang, A., Feng, B., **Zou, C.**, Sun, Y., Kovachki, N. B., Ross, Z. E., Bouman, K., & Yue, Y. (2025). Inversebench: Benchmarking Plug-and-Play Diffusion Models for Scientific Inverse Problems. *In The Thirteenth International Conference on Learning Representations*.

5. **Zou, C.**, Azizzadenesheli, K., Ross, Z. E., & Clayton, R. W. (2024). Deep Neural Helmholtz Operators for 3D Elastic Wave Propagation and Inversion. *Geophysical Journal International, 239*(3), 1469-1484.

6. **Zou, C.**, Zhao, L., Hong, F., Wang, Y., Chen, Y., & Geng, J. (2023). A Comparison of Machine Learning Methods to Predict Porosity in Carbonate Reservoirs from Seismic-Derived Elastic Properties. *Geophysics, 88*(2), B101-B120.

7. **Zou, C.**, Zhao, L., Xu, M., Chen, Y., & Geng, J. (2021). Porosity Prediction with Uncertainty Quantification from Multiple Seismic Attributes Using Random Forest. *Journal of Geophysical Research: Solid Earth, 126*(7), e2021JB021826.

8. Zhao, L., **Zou, C.**, Chen, Y., Shen, W., Wang, Y., Chen, H., & Geng, J. (2021). Fluid and Lithofacies Prediction Based on Integration of Well-Log Data and Seismic Inversion: A Machine-Learning Approach. *Geophysics, 86*(4), M151-M165.

PREPRINT

1. **Zou, C.**, Shi, Y., Ross, Z. E., Clayton, R. W., & Azizzadenesheli, K. (2026). Enforcing Reciprocity in Operator Learning for Seismic Wave Propagation. arXiv preprint arXiv:2602.11631.

INVITED TALK

Ambient Noise Full Waveform Inversion with Neural Operators Feb 5, 2026
UCLA Planetary/Geophysics/Geochemistry Seminar

PROFESSIONAL SERVICE

Reviewer for –
Geophysical Journal International (1 review)
Geophysics (8 reviews)
Geophysical Prospecting (2 reviews)
Earth and Space Science (2 reviews)
Journal of Geophysical Research: Machine Learning and Computation (1 review)

Organizer for the monthly Caltech Seismo Lab Coffee Hour on Machine Learning 2026

Co-convener for session 2026
Developing Data-Driven Methods in the AI Era: New Approaches to Earthquake Science
Seismological Society of America Annual Meeting (Pasadena, CA)

Co-convener for session 2025
Advances in Machine Learning for Solid Earth Geoscience
American Geophysical Union Annual Meeting (New Orleans, LA)

Organizer for the weekly Caltech Seismo Lab Seminar 2024 – 2025

TEACHING

Seismology	Teaching Assistant	Caltech	SP 2023 – 24
Machine Learning in Geophysics	Teaching Assistant	Caltech	FA 2024 – 25
			FA 2025 – 26
Projects in Machine Learning	Teaching Assistant	Caltech	FA 2024 – 25