

Ziyi Xi

Michigan State University
428 South Shaw Lane
East Lansing, MI 48824
United States

phone: +1-517-505-0802
email: xiziyi@msu.edu
website: <https://ziyixi.science>
ORCID: [0000-0003-3010-0486](https://orcid.org/0000-0003-3010-0486)

Education

- *PhD in Computational Science*, Michigan State University 2018 - present
Advisor: [Min Chen](#)
- *BE in Computer Science (dual)*, University of Science and Technology of China 2015 - 2018
Advisor: [Guangzhong Sun](#)
- *BS in Geophysics*, University of Science and Technology of China 2014 - 2018
Member of the Zhao Jiuzhang Talent Program in Earth and Space Sciences
Advisor: [Daoyuan Sun](#)

Experience

- *Graduate Research Assistant*, Michigan State University 2018 - present
- *Teaching Assistant of theoretical mechanics and Electromagnetism* 2016, 2017
University of Science and Technology of China
- *Summer Research Intern in Geophysics* 2017
University of California, Los Angeles

Awards

- Conference Travel Funding awarded by MSU CMSE Graduate Studies Committee 2019
- Ginther Graduate fellowship, Michigan State University 2018
- Outstanding Student awards (First Class), University of Science and Technology of China 2017
- Zhao Jiuzhang Scholarship, University of Science and Technology of China 2015, 2016
- National basic subject talent training plan, Chinese Ministry of Education 2016

Professional Societies

- Member of the European Geosciences Union ([EGU](#)) 2021 - present
- Member of the Seismological Society of America ([SSA](#)) 2020 - present
- Member of the American Geophysical Union ([AGU](#)) 2019 - present

Papers

*corresponding author

Peer-reviewed Papers

1. Li, J.*, Chen, M., Koper K., Zhou T., **Xi, Z.**, Li, S., Li, G. FastTrip: A Fast MPI-accelerated 1-D Triplication Waveform Inversion Package for Constraining Mantle Transition Zone Discontinuities. ([Seismic Research Letter](#))

Papers in Preparation

2. Chen, M.*, **Xi, Z.**, Grima, A. Existence of a low-viscosity layer beneath the 660-km discontinuity based on the orphan slabs imaged beneath East Asia.
1. **Xi, Z.***, Chen, M., Zhou, T., Li, J., Wang, B., Kim, Y. A New East Asia Radially Anisotropic Model EARA2021 of the Eurasia Continents and the Western Pacific Subduction Zones.

Papers Submitted

1. Zhou, T.*, **Xi, Z.**, Chen, M., Li, J. Initial model assessment for intermediate-period full-waveform inversion of the contiguous U.S. and surrounding regions ([Submitted to Geophys. J. Int.](#)).

Earth Models

1. East Asia Radial Anisotropy Model 2020 (EARA2020) A 3D radial anisotropy Earth velocity model of East Asia and Western Pacific Slabs. The product is to be submitted to the Incorporated Research Institutions for Seismology, EarthModels (IRIS-EMC). The model can be viewed at <https://eara2020.ziyixi.science/>

Open Source softwares

1. [pyfk](#), implements the propagation matrix method to calculate the Green's function and the synthetic waveforms for the 1D Earth model. It has also been paralleled using MPI/CUDA, with 100x speed up.

Meeting Abstracts

8. **Xi, Z.**, Chen, M., Zhou, T., Wang, B., Kim, Y. (2020) Slab Thinning Controls the Distribution of Large Deep Intraslab Earthquakes in the Western Pacific Subduction Zones. [#T018-0021](#) virtually presented at 2020 AGU Fall Meeting.
7. Chen, M., **Xi, Z.**, Kiser, E., Kehoe, H. (2020) Slab morphology at the source region of the 2015 Mw 7.9 Bonin earthquake imaged by full waveform inversion. [#S035-0011](#) virtually presented at 2020 AGU Fall Meeting.
6. Li, J., Chen, M., Zhou, T., **Xi, Z.**(2020) Double-difference adjoint tomography of the Cascadia subduction zone. [#S063-0011](#) virtually presented at 2020 AGU Fall Meeting.
5. Zhou, T., Chen, M., **Xi, Z.**(2020) Lithospheric structure of the North American Craton constrained by full waveform inversion. [#T034-0010](#) virtually presented at 2020 AGU Fall Meeting.
4. **Xi, Z.**, Chen, M., Zhou, T., Wang, B., Kim, Y. (2019) Towards a Refined 3D Model of the Western Pacific Slab to Investigate the Nature of Deep Earthquakes. [#T21F-0384](#) presented at 2019 AGU Fall Meeting.
3. Zhou, T., **Xi, Z.**, Chen, M. (2019) Full waveform inversion of the crust and upper mantle model beneath the contiguous US. [#S23A-07](#) presented at 2019 AGU Fall Meeting.
2. Chen, M., **Xi, Z.**(2019) Short-period Full Waveform Modeling of the Spatial Relationships of Fine Slab Structure and Deep Earthquakes beneath Japan and Izu-Bonin. [#S13C-0440](#) presented at 2019 AGU Fall Meeting.
1. Chen, M., Zhou, T., **Xi, Z.**(2019) Validation of Seismic Crustal and Mantle Models of the Contiguous U.S. Presented at 2019 SSA Annual Meeting.

Presentations

- | | |
|---|------------|
| • Talk on the Eastern Session of the Seismological Society of America | 2020 |
| • Poster presentation in the AGU fall meeting | 2019, 2020 |
| • Poster presentation in the Gordon Research Conference | 2019 |

Skills

Languages	Mandarin Chinese, English.
Computer Skills	Software Programming: Python, C, C++, Bash, Julia, Javascript, Fortran Web Development: HTML, MySQL, Flask, Vue.js, React.js Software Engineering: Git Workflow, Software Testing, Debugging and Profiling Tools Data Science: Machine Learning, Web Crawling, Data Visualization GPU computing: CUDA, Nvidia CUDA packages like cuBLAS and cuSOLVER, multiple GPU communication (NCCL) Parallel computing: MPI, RPC, Quantum Computing System Administration: Linux, Docker, NGINX, Network Configuration, Slurm
Music	Cucurbit flute (Chinese traditional instrument) (Skilled); Guitar (Entry-level); Piano (Entry-level)
Driving	Michigan Driver's License

Software Projects

- [Parallel-simulated-annealing](#) A python implementation of the parallel simulated annealing algorithm.
- [model viewer](#) The source code for hosting the model_viewer of Earth velocity model EARA2020, implemented with React.js and Flask, deployed with docker.
- [seisflow](#) A full-waveform inversion workflow package, developed for the need of my daily research.
- [wechat mpvue](#) The frontend part of my personal wechat mini-program, developed using Vue.js.
- [ziyixi.science](#) My personal website, developed using React.js, able to sync with my notion blogs.
- [SpecfemMeshInterpreter.jl](#) A Julia package to interpret the finite element mesh in Specfem3D Globe to even spacing Netcdf file, written in parallel with MPI.