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## 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

### 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

2. 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).

1. Li, J.*, Chen, M., Ning, J., Zhou T., **Xi, Z.**, Li, G. Fast Trip: A fast MPI-accelerated 1-D triplication waveform inversion package for constraining the mantle discontinuities. (Submitted to Seismic Research Letters)

### 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

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| **Languages** | Mandarin Chinese, English. |
| **Computer Skills** | **Software Programming:** Python, C, C++, Bash, Julia, Javascript, Fortran<br>**Web Development:** HTML, MySQL, Flask, Vue.js, React.js<br>**Software Engineering:** Git Workflow, Software Testing, Debugging and Profiling Tools<br>**Data Science:** Machine Learning, Web Crawling, Data Visualization<br>**GPU computing:** CUDA, Nvidia CUDA packages like cuBLAS and cuSOLVER, multiple GPU communication (NCCL)<br>**Parallel computing:** MPI, RPC, Quantum Computing<br>**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 presonal 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.