

Curriculum Vitae

Jing Chen

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Personal Information Born on 16 March, 1994 in Hubei Province, P.R. China.

Education Experience

- Division of Mathematical Sciences, School of Physical & Mathematical Sciences, Nanyang Technological University *Sept. 2021 - present*
 - Research fellow
 - Advisor: Associate Prof. Ping Tong
- Visiting Ph.D Student in GFZ German Research Centre for Geosciences *Sept. 2018 - Sept. 2019*
 - Joint advisor: Senior Scientist Dr. Xiaohui Yuan
- Department of Mathematical Sciences, Tsinghua University *Aug. 2016 - Jun. 2021*
 - Doctor of Science in Mathematics, Tsinghua University
 - Advisor: Associate Prof. Hao Wu
- Bachelor of Science in Mathematics, Tsinghua University *Jul. 2016*

Research Interests

- Seismic tomography
- Inverse problems
- Optimal transport

Awards

- [1] Excellent Paper in the Workshop of Beijing-Tianjin-Hebei Society for Computational Mathematics, Beijing Association for Computational Mathematics, 2021.

- [2] The Most Concerned Academic Paper in Beijing, Beijing Association for Science and Technology, 2019.
- [3] Excellent Youth Paper Award, China Society for Industrial and Applied Mathematics, 2017.
- [4] Excellent Youth Paper Award, Annual Meeting of Chinese Geoscience Union, 2017.

Academic Activities

- Conference Speeches and Posters

- [1] *The European Geosciences Union General Assembly 2023*, Vienna, Austria, April, 2023. **(poster presentation)**
- [2] *The American Geophysical Union Fall Meeting 2002*, Chiacago, America, 2022. **(on-line poster presentation)**
- [3] *The Applied Math PhD Seminar*, Fudan University, Shanghai, China, 2021. **(contributed talk)**
- [4] *The 4th Youth Forum in the 18th Annual Meeting of CSIAM*, Online, November, 2020. **(contributed talk)**
- [5] *The 6th Doctoral Forum of Beijing for Computational Mathematics*, Peking University, Beijing, China, October, 2020. **(contributed talk)**
- [6] *The European Geosciences Union General Assembly 2019*, Vienna, Austria, April, 2019. **(poster presentation)**
- [7] *Doctoral Forum of GFZ German Research Centre*, Potsdam, Germany, March, 2019. **(poster presentation)**
- [8] *The 2017 Annual Meeting of Chinese Geoscience Union Mini-symposium on “Topic 50. Seismic Wave Propagation and Imaging”*, Beijing, China, October, 2017. **(contributed talk)**
- [9] *Youth Forum in the 15th Annual Meeting of CSIAM*, Qingdao, China, October, 2017. **(contributed talk & poster presentation)**
- [10] *Doctoral Forum of Tsinghua University*, Sanbao, Beijing, China, March, 2017. **(contributed talk)**

- Conference Attended

- [1] *SciCADE, the International Conference on Scientific Computation and Differential Equations*, National University of Singapore, Singapore, 2024.

- [2] *The Workshop of Computational Geophysics and Partial Differential Equation Inverse Problems*, Northwestern Polytechnical University (Online), November, 2020.
- [3] *The Forum of Tsinghua University for Computational Mathematics and Operations Research*, Tsinghua University, Beijing, China, November, 2020.
- [4] *The 17th Annual Meeting of CSIAM*, Foshan, China, September, 2019
- [5] *The 2017 Annual Meeting of NSFC Key Project “Computational Methods for Multi-scale, Multi-physics Transport Problems in Hyperbolic Vehicles”*, Shanghai Jiao Tong University, Shanghai, China, May, 2017.
- [6] *2016 Workshop of Beijing-Tianjin-Hebei Society for Computational Mathematics*, Tianjing, China, Sep, 2016.
- [7] *Computational Seismology*, Tsinghua Sanya International Mathematics Forum, Sanya, Hainan, China, Jan, 2016.

Publications

• Published or accepted:

- 21. Y. Bai, S. Hao, J. Xie, M. Xu, X. Xiao, **J. Chen**, C.F. Chey, D. Wang, and P. Tong, *Geothermal potential in Singapore explored with non-invasive seismic data*. Eng. Geol., 348(2025), 107968.
<https://doi.org/10.1016/j.enggeo.2025.107968>
- 20. G. Chen, **J. Chen**, T. Li, M. Xu, Q. Zhao, and P. Tong, *Adjoint-state reflection travelttime tomography for velocity and interface inversion with its application in central California near Parkfield*. J. Geophys. Res. Solid Earth, 130(2025), e2024JB029918.
<https://doi.org/10.1029/2024JB029918>
- 19. M. Xu, S. Hao, **J. Chen**, B. Zhang, and P. Tong, *SurfATT: High-performance package for adjoint-state surface-wave travelttime tomography*. Seismol. Res. Lett., (2025).
<https://doi.org/10.1785/0220240206>
- 18. X. Zhang, X. Song, **J. Chen**, L. Zhang, P. Tong, and Y. Li, *The P-wave velocity and azimuthal anisotropy structure of southeastern margin of the Tibetan Plateau from adjoint-state travelttime tomography*, Sci. China Earth Sci., 68(2025), pp. 702–719.
<https://doi.org/10.1007/s11430-024-1504-x>
- 17. M. Xu, K. Wang, **J. Chen**, J. He, Q. Liu, Y. Liu, Z. Huang, and P. Tong, *Multi-level mechanisms driving intraplate volcanism in central Mongolia revealed by adjoint*

waveform tomography of receiver function and ambient noise data. Earth Planet. Sci. Lett. 650(2025), 119137.
<https://doi.org/10.1016/j.epsl.2024.119137>

16. D. Wang, S. Hao, **J. Chen**, G. Song, and P. Tong *Imaging complex structures of the Los Angeles Basin via adjoint-state travelttime tomography.* Bull. Seismol. Soc. Am. (2024).
<https://doi.org/10.1785/0120240035>
15. S. Hao, **J. Chen**, M. Xu, and P. Tong, *Topography-incorporated adjoint-state surface wave travelttime tomography: Method and a case study in Hawaii.* J. Geophys. Res. Solid Earth, 129(2024), e2023JB027454.
<https://doi.org/10.1029/2023JB027454>
14. Q. Liao, Z. Wang, **J. Chen**, B. Bai, S. Jin, and H. Wu, *Fast sinkhorn II: collinear triangular matrix and linear time accurate computation of optimal transport.* J. Sci. Comput., 98 (2024).
<https://doi.org/10.1007/s10915-023-02403-2>
13. **J. Chen**, S. Wu, M. Xu, M. Nagaso, J. Yao, K. Wang, T. Li, Y. Bai, and P. Tong, *Adjoint-state teleseismic travelttime tomography: method and application to Thailand in Indochina Peninsula.* J. Geophys. Res. Solid Earth, 128(2023), e2023JB027348.
<https://doi.org/10.1029/2023JB027348>
12. P. Tong, T. Li, **J. Chen**, and M. Nagaso, *Adjoint-state differential arrival time tomography.* Geophys. J. Int., 236 (2023), pp. 139-160.
<https://doi.org/10.1093/gji/ggad416>
11. M. Xu, K. Wang, **J. Chen**, D. Yu, P. Tong, *Receiver function adjoint tomography for three-dimensional high-resolution seismic array imaging: methodology and applications in southeastern Tibet.* Geophys. Res. Lett., 50 (2023), e2023GL104077.
<https://doi.org/10.1029/2023GL104077>
10. Z. Li, Y. Tang, **J. Chen**, and H. Wu, *On quadratic Wasserstein metric with squaring scaling for seismic velocity inversion.* Numer. Math. Theor. Meth. Appl., 16 (2023), pp. 277-297.
<https://doi.org/10.4208/nmtma.OA-2022-0111>
9. **J. Chen**, G. Chen, M. Nagaso, and P. Tong, *Adjoint-state travelttime tomography for azimuthally anisotropic media in spherical coordinates.* Geophys. J. Int., 234 (2023), pp. 712-736.

<https://doi.org/10.1093/gji/ggad093>

8. D. Zhou, **J. Chen**, H. Wu, and D. Yang, *The Wasserstein-Fisher-Rao metric for waveform based earthquake location*. J. Comput. Math., 41 (2023), pp. 417-438.
<https://doi.org/10.4208/jcm.2109-m2021-0045>
7. G. Chen, **J. Chen**, C. Tape, H. Wu, and P. Tong, *Double-difference adjoint tomography of the crust and uppermost mantle beneath Alaska*. J. Geophys. Res. Solid Earth, 128 (2023), e2022JB025168.
<https://doi.org/10.1029/2022JB025168>
6. Q. Liao, **J. Chen**, Z. Wang, B. Bai, S. Jin, and H. Wu, *Fast Sinkhorn I: An $O(N)$ algorithm for the Wasserstein-1 metric*. Comm. Math. Sci., 20 (2022), pp. 2053-2067.
<https://doi.org/10.4310/CMS.2022.v20.n7.a11>
5. **J. Chen**, G. Chen, H. Wu, J. Yao, and P. Tong, *Adjoint tomography of northeast Japan revealed by common-source double-difference travel-time data*. Seismol. Res. Lett., 93 (2022), pp. 1835-1851.
<https://doi.org/10.1785/0220210317>
4. **J. Chen**, S.-K. Kufner, X. Yuan, B. Heit, H. Wu, D. Yang, B. Schurr, and S. Kay, *Lithospheric delamination beneath the southern Puna plateau resolved by local earthquake tomography*. J. Geophys. Res. Solid Earth, 125 (2020), e2019JB019040.
<https://doi.org/10.1029/2019JB019040>
3. **J. Chen**, H. Jing, P. Tong, H. Wu, and D. Yang, *The auxiliary function method for waveform based earthquake location*. J. Comput. Phys., 413 (2020), 109453.
<https://doi.org/10.1016/j.jcp.2020.109453>
2. **J. Chen**, Y. Chen, H. Wu, and D. Yang, *The quadratic Wasserstein metric for earthquake location*. J. Comput. Phys., 373 (2018), pp. 188-209.
<https://doi.org/10.1016/j.jcp.2018.06.066>
1. H. Wu, **J. Chen**, X. Huang, and D. Yang, *A new earthquake location method based on the waveform inversion*. Comm. Comput. Phys., 23 (2018), pp. 118-141.
<https://doi.org/10.4208/cicp.OA-2016-0203>

• **Submitted**

4. D. Wang, **J. Chen**, S. Hao, and P. Tong, *A novel fast sweeping method for computing the attenuation operator t^* in absorbing media*. Submitted to Geophys. J. Int.

3. **J. Chen**, M. Nagaso, M. Xu, and P. Tong, *TomoATT: An open-source package for Eikonal equation-based adjoint-state traveltime tomography for seismic velocity and azimuthal anisotropy*. Submitted to Comput. Geosci.
<https://doi.org/10.48550/arXiv.2412.00031>
2. C. Chen, **J. Chen**, B. Luo, S. Jin, and H. Wu, *A numerical algorithm with linear complexity for multi-marginal optimal transport with L^1 cost*. Submitted to CSIAM Trans. Appl. Math.
<https://doi.org/10.48550/arXiv.2405.19246>
1. **J. Chen**, M. Xu, Y. Bai, S. Wu, X. Xiao, S. Hao, M. Nagaso, H. Yang, and P. Tong, *Enhanced normal stress triggers supershear rupture of the 2023 Mw 7.8 Turkey earthquake*. Submitted to Nat. Geosci.