Yifei Jiao

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About Me

I am Yifei Jiao (he/him), a postdoc researcher at UC Santa Cruz and Tsinghua University. My research interests are focused on **the collisional and dynamical evolution of small planetary bodies**, as well as the asteroid exploration and deflection dynamics. I would enjoy exploring any unsolved and exciting questions of our solar system with theoretical and numerical methods.

Education

Tsinghua University, Beijing, China 2020–2025
PhD with Prof. Hexi Baoyin
Numerical modeling of impact ejection and collisional evolution of asteroids

Tsinghua University, Beijing, China 2016–2020
Bachelor of Engineering

Experience

University of California, Santa Cruz, CA, USA Sep 2025–now
Research Fellow with Prof. Francis Nimmo

Tsinghua University, Beijing, China Sep 2025–now
Postdoc with Prof. Hexi Baoyin

Shanghai Astronomical Observatory, Shanghai, China Aug 2025
Visiting Scholar with Prof. Xian Shi

University of Tokyo & NAOJ, Tokyo, Japan May 2025
Visiting Student with Prof. Seiji Sugita

LPL, University of Arizona, Tucson, AZ, USA Jan–Jun 2024
Visiting Student with Prof. Erik Asphaug

Tsinghua University, Beijing, China 2020, 2021
Teaching Assistant for Theoretical Mechanics

Grants

National Natural Science Foundation of China (PI) 2024–2025
Impact dynamics and collisional evolution of highly porous asteroids

Youth Talent Support Program of China Association for Science and Technology 2024–2025
Host by the Chinese Society of Space Research

Publications

1. **Yifei Jiao**, Bin Cheng, Wen-Yue Dai, Erik Asphaug, Martin Jutzi, Sabina Raducan, Xiaoran Yan, Yang Yu, Hexi Baoyin. *Giant craters on 253 Mathilde revealing the cohesive porous interior of carbonaceous parent bodies. Nature Geoscience (under review)*

Last updated: September, 2025

2. **Yifei Jiao**, Bin Cheng, Hexi Baoyin. *Probing the Moon from future asteroid impacts: a review. Science China Technological Sciences (under review)*

3. **Yifei Jiao**, Bin Cheng, Yukun Huang, Erik Asphaug, Brett Gladman, Renu Malhotra, Patrick Michel, Yang Yu, Hexi Baoyin. *Asteroid (469219) Kamoʻoalewa's journey from the lunar Giordano Bruno crater to Earth 1:1 resonance. Nature Astronomy (2024)*

4. **Yifei Jiao**, Xiaoran Yan, Bin Cheng, Hexi Baoyin. *SPH-DEM modeling of hypervelocity impacts on rubble-pile asteroids. Monthly Notices of the Royal Astronomical Society (2023)*

5. **Yifei Jiao**, Bin Cheng, Hexi Baoyin. *Optimal kinetic-impact geometry for asteroid deflection exploiting Delta-V hodograph. Journal of Guidance, Control, and Dynamics (2022)*

6. Yixuan Wu, **Yifei Jiao**, Wen-Yue Dai, Yukun Huang, Zihan Liu, Bin Cheng, Hexi Baoyin, Junfeng Li. *Detection efficiency of the lunar-origin asteroid population. The Astrophysical Journal Letters (in prep.)*

7. Yifan He, **Yifei Jiao**, Yixuan Wu, Wen-Yue Dai, Bin Cheng, Hexi Baoyin. *When the Moon shakes and glows: observational signatures of a potential 2024 YR4 impact. The Astrophysical Journal Letters (in prep.)*

8. Tamier Baoyin, **Yifei Jiao**, Bin Cheng. *Predicting the collision history of basaltic asteroids from parametrized shapes with an artificial neural network. Monthly Notices of the Royal Astronomical Society (under review)*

9. Wen-Yue Dai, Bin Cheng, Yukun Huang, **Yifei Jiao**, Wen-Han Zhou, Kun-Yi Ren, Harrison Agrusa, Seth Jacobson, Eiichiro Kokubo, Sebastien Charnoz, Yang Yu, Hexi Baoyin, Junfeng Li. *Diverse configurations of binary asteroids explained by multi-generation satellites. Nature Communications (under review)*

10. Nan Zhang, Zhong Zhang, **Yifei Jiao**, Hexi Baoyin. *Multi-trajectory combination for multiple ground target observation by maneuvering on-orbit satellites. IEEE Transactions on Aerospace and Electronic Systems (2023)*

11. Zhong Zhang, Nan Zhang, **Yifei Jiao**, Hexi Baoyin, Junfeng Li. *Multitree search for multisatellite responsiveness scheduling considering orbital maneuvering. IEEE Transactions on Aerospace and Electronic Systems (2021)*

Conferences/Seminars

Seminar, Shanghai Astronomical Observatory, Shanghai, China	Aug 2025
PhD Academic Forum of Tsinghua University, Beijing, China	May 2025
Seminar, National Astronomical Observatory of Japan, Tokyo, Japan	May 2025
Seminar, University of Tokyo, Tokyo, Japan	May 2025
Europlanet Science Congress, Berlin, Germany	Sep 2024
Seminar, LPL, University of Arizona, Tucson, AZ, USA	Apr 2024
Young Scientist Forum of Planetary Science, Sanya, China	Mar 2023

Software

1. **Yifei Jiao**, et al. The SPHSOL code, which is a parallel smoothed particle hydrodynamics C++ solver for simulating the impact process in planetary science. https://sphsol-tutorial.readthedocs.io

Honors and Awards

Outstanding Doctoral Dissertation Award, Tsinghua University	2025
Outstanding Doctoral Graduate Award, Beijing Municipality	2025
Tsinghua Top Grade Scholarship (10 best students per year), Tsinghua University	2024
China National Scholarship, China	2024
Outstanding Paper Award, Young Scientist Forum of Planetary Science, China	2023
The First/Second Prize Scholarship, Tsinghua University	2022, 2023
China Trajectory Optimization Competition, 2nd Place, China	2020
Air Cargo Challenge, 4th Place, Germany	2019
Outstanding Academic Scholarship, Tsinghua University	2017, 2018, 2019

Student Mentoring

Yixuan Wu, Yifan He (Tsinghua University)	2025
Likun Song (Tongji University)	2025
Tamier Baoyin (Dartmouth College)	2024

Services

Referee for Nature Communications, Space: Science & Technology, Earth and Planetary Physics