

Yifei Jiao

<https://jiaoyf-thu.github.io>

Address: Tsinghua University, Haidian, Beijing, 100084, China
Email: jiaoyf.thu@gmail.com; jiaoyf20@mails.tsinghua.edu.cn

ABOUT ME

I am currently a PhD student at Laboratory of AstroDynamics, Tsinghua University. My research interests are focused on **asteroid exploration and deflection dynamics**, as well as the **collisional and dynamical evolution of small planetary bodies** in the solar system. I am also engaged in the exploration of numerical simulations and optimization algorithms in planetary science.

EDUCATION

Lunar & Planetary Laboratory, University of Arizona, Tucson, AZ, USA <i>Visiting Student with Prof. Erik Asphaug</i>	2024
Tsinghua University, Beijing, China <i>PhD Student with Prof. Hexi Baoyin</i>	2020–2025
Tsinghua University, Beijing, China <i>Bachelor</i>	2016–2020

GRANTS

National Natural Science Foundation of China (PhD Student) <i>Impact dynamics and collisional evolution of highly porous asteroids</i>	2024–2025
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EXPERIENCE

Teaching Assistant for Theoretical Mechanics, Tsinghua University	2020, 2021
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SCHOLARSHIPS AND AWARDS

The First/Second Prize Scholarship, Tsinghua University	2022, 2023
Excellent Academic Scholarship, Tsinghua University	2017, 2018, 2019
Excellent Paper Award, Young Scientist Forum of Planetary Science, China	2023
2nd Place, China Trajectory Optimization Competition, China	2020
4th Place, Air Cargo Challenge, Germany	2019

SELECTED PUBLICATIONS

1. **Y. Jiao**, B. Cheng, Y. Huang, E. Asphaug, B. Gladman, R. Malhotra, P. Michel, Y. Yu, H. Baoyin. *Asteroid (469219) Kamoʻoalewa’s journey from the lunar Giordano Bruno crater to Earth 1:1 resonance*. *Nature Astronomy* (2024)
2. **Y. Jiao**, E. Asphaug, B. Cheng, H. Baoyin. *Effect of giant cratering impacts on the slow rotation of asteroid Mathilde*. *Europlanet Science Congress* (2024)
3. **Y. Jiao**, et al. *Dynamical constraints linking Earth co-Orbital asteroid Kamoʻoalewa to the lunar Giordano Bruno impact*. *Lunar and Planetary Science Conference* (2024)

4. **Y. Jiao**, et al. *Exploring asteroid (469219) Kamo'oalewa's possible origin from lunar crater Giordano Bruno*. Asteroids, Comets, Meteors Conference (2023)
5. **Y. Jiao**, X. Yan, B. Cheng, H. Baoyin. *SPH-DEM modeling of hypervelocity impacts on rubble-pile asteroids*. Monthly Notices of the Royal Astronomical Society (2023)
6. **Y. Jiao**, B. Cheng, H. Baoyin. *Optimal kinetic-impact geometry for asteroid deflection exploiting Delta-V hodograph*. Journal of Guidance, Control, and Dynamics (2022)
7. **Y. Jiao**, B. Cheng, S. Chen, H. Baoyin. *Numerical simulations of hypervelocity impacts to defend against small bodies*. SCIENTIA SINICA Technologica (in Chinese, 2022)
8. X. Yan, P. Michel, Y. Liu, R. Ni, **Y. Jiao**, J. Li. *Material Point Method (MPM) in simulating hypervelocity impact on asteroids*. Icarus (submitted, 2024)
9. N. Zhang, Z. Zhang, **Y. Jiao**, H. Baoyin. *Multi-trajectory combination for multiple ground target observation by maneuvering on-orbit satellites*. IEEE Transactions on Aerospace and Electronic Systems (2023)
10. Z. Zhang, N. Zhang, **Y. Jiao**, H. Baoyin, J. Li. *Multitree search for multisatellite responsiveness scheduling considering orbital maneuvering*. IEEE Transactions on Aerospace and Electronic Systems (2021)

SOFTWARE

1. **SPHSOL**, which is a parallel smoothed particle hydrodynamics C++ solver for simulating the impact process in planetary science. <https://sphsol-tutorial.readthedocs.io>