

Chuanpeng Hou PhD

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Education

- 2024 📖 **PhD degree, Peking University** in Space Physics
- 2022 – 2024 📖 **Visiting PhD student, IRAP, Toulouse, France** in Space Physics
Research field: *Origin and evolution of Alfvénic switchbacks.*
- 2019 – 2024 📖 **PhD student, Peking University** in Space Physics
Research field: *Dynamics of the solar atmosphere, Evolution of solar wind, Magnetic connectivity, Waves and turbulence in space plasma.*
- 2019 📖 **Bachelor's degree, Peking University** in Space Physics
- 2015 – 2019 📖 **Undergraduate, Peking University** in Space Physics

Skills

- Coding 📖 Python, MATLAB, FORTRAN, IDL
- Languages 📖 Mandarin Chinese, English
- Knowledge 📖 Solar physics, Plasma physics, Heliosphere physics, MHD simulation, PIC simulation

Awards and Scholarships

Awards

- 2024 📖 **Best Student Paper Awards**, National Planetary Science Conference.
- 2023 📖 **Merit Student**, Peking University.
- 2022 📖 **Best Student Paper Awards**, Chinese Geoscience Union (CGU).
📖 **Best Student Poster Awards**, Asia Oceania Geosciences Society (AOGS).
- 2021 📖 **Graduate Award for Scientific Research**, Peking University.

Scholarships

- 2023 📖 **Peking University President's Scholarship**, Peking University.

Research Publications

Journal Articles (†, co-first author)

- 1 C. Hou, B. Gannouni, A. P. Rouillard, J. He, and V. Réville, "Fine-scale activity driven by magnetic reconnection within coronal microjets", *Astronomy & Astrophysics* **697**, A67 (2025).
- 2 C. Hou, J. He, D. Duan, Z. Wu, Y. Chen, D. Verscharen, A. P. Rouillard, H. Li, L. Yang, and S. D. Bale, "The origin of interplanetary switchbacks in reconnection at chromospheric network boundaries", *Nature Astronomy* **8**, 1246–1256 (2024).

- 3 **C. Hou**, A. P. Rouillard, J. He, B. Gannouni, V. Réville, P. Louarn, A. Fedorov, L. Přech, C. J. Owen, D. Verscharen, R. D'Amicis, L. Sorriso-Valvo, N. Fargette, J. Coburn, V. Génot, J. M. Raines, R. Bruno, S. Livì, B. Lavraud, N. André, G. Fruit, R. Kieokaew, I. Plotnikov, E. Penou, A. Barthe, D. Kataria, M. Berthomier, F. Allegrini, V. Fortunato, G. Mele, and T. Horbury, "Connecting solar wind velocity spikes measured by solar orbiter and coronal brightenings observed by sdo", *The Astrophysical Journal Letters* **968**, L28 (2024).
- 4 **C. Hou**, X. Zhu, R. Zhuo, J. He, D. Verscharen, and D. Duan, "Nature, generation, and dissipation of alfvénic kinks/switchbacks observed by parker solar probe and wind", *The Astrophysical Journal* **950**, 157 (2023).
- 5 **C. Hou**, J. He, D. Duan, X. Zhu, W. Li, D. Verscharen, T. Liu, and T. Wang, "Efficient energy conversion through vortex arrays in the turbulent magnetosheath", *The Astrophysical Journal* **946**, 13 (2023).
- 6 **C. Hou**, J. He, X. Zhu, and Y. Wang, "Contribution of magnetic reconnection events to energy dissipation in space plasma turbulence", *The Astrophysical Journal* **908**, 237 (2021).
- 7 **C. Hou**, J. He, L. Zhang, Y. Wang, and D. Duan, "Dynamics of the charged particles released from a sun-grazing comet in the solar corona", *Earth and Planetary Physics* **5**, 232–238 (2021).
- 8 Y. Sun†, J. Zhao†, **C. Hou**†, and W. Jiao, "Highlight advances in planetary physics in the solar system: in situ detection over the past 20 years", *Space: Science & Technology* **3**, 0007 (2023).
- 9 L. Yang, **C. Hou**, X. Feng, J. He, M. Xiong, M. Zhang, Y. Zhou, F. Shen, X. Zhao, H. Li, et al., "Global morphology distortion of the 2021 october 9 coronal mass ejection from an ellipsoid to a concave shape", *The Astrophysical Journal* **942**, 65 (2023).
- 10 J. He, X. Zhu, Q. Luo, **C. Hou**, D. Verscharen, D. Duan, W. Li, J. Zhao, T. Wang, D. B. Graham, et al., "Observations of rapidly growing whistler waves in front of space plasma shock due to resonance interaction between fluctuating electron velocity distributions and electromagnetic fields", *The Astrophysical Journal* **941**, 147 (2022).
- 11 J. He, X. Zhu, L. Yang, **C. Hou**, D. Duan, L. Zhang, and Y. Wang, "Solar origin of compressive alfvénic spikes/kinks as observed by parker solar probe", *The Astrophysical Journal Letters* **913**, L14 (2021).
- 12 J. He, B. Cui, L. Yang, **C. Hou**, L. Zhang, W.-H. Ip, Y.-D. Jia, C. Dong, D. Duan, Q. Zong, et al., "The encounter of the parker solar probe and a comet-like object near the sun: model predictions and measurements", *The Astrophysical Journal* **910**, 7 (2021).
- 13 J. Zhao, S. Wang, W. Sun, X. Zhu, **C. Hou**, Q. Zong, J. He, X. Zhou, C. Yue, and L. Yang, "Statistics of the interplanetary magnetic field from 0.1 to 30 au. i. distribution character", *The Astrophysical Journal* **980**, 89 (2025).
- 14 J. Zhao, S. Wang, W. Sun, X. Zhu, **C. Hou**, Q. Zong, J. He, X. Zhou, C. Yue, L. Yang, et al., "Statistics of the interplanetary magnetic field from 0.1 to 30 au. ii. dynamical variability", *The Astrophysical Journal* **987**, 93 (2025).
- 15 R. Zhuo, J. He, D. Duan, X. Zhu, and **C. Hou**, "Oblique compressible waves in the reconnection exhaust region embedded in the inner heliospheric current sheet observed by parker solar probe", *The Astrophysical Journal* **969**, 47 (2024).
- 16 R. Lin, Z. Luo, J. He, L. Xie, **C. Hou**, and S. Chen, "Prediction of solar wind speed through machine learning from extrapolated solar coronal magnetic field", *Space Weather* **22**, e2023SW003561 (2024).
- 17 Z. Wu, J. He, D. Duan, X. Zhu, **C. Hou**, D. Verscharen, G. Nicolaou, C. J. Owen, A. Fedorov, and P. Louarn, "Ion energization and thermalization in magnetic reconnection exhaust region in the solar wind", *The Astrophysical Journal* **951**, 98 (2023).

- 18 Z. Huang, M. Velli, C. Shi, Y. Zhu, B. Chandran, T. Bowen, V. Réville, J. Huang, **C. Hou**, N. Sioulas, et al., “Dominance of 2 minute oscillations near the alfvén surface”, *The Astrophysical Journal Letters* **977**, L12 (2024).
- 19 L. Yang, J. He, X. Feng, D. Verscharen, F. Guo, H. Li, H. Tian, W. Li, F. Shen, **C. Hou**, et al., “Natural generation of alfvén waves from three-dimensional bursty interchange magnetic reconnection in the solar corona”, *The Astrophysical Journal Letters* **982**, L25 (2025).
- 20 M. Ma, G. M. Calvés, G. Címò, M. Xiong, P. Li, J. Kong, P. Zhang, J. He, L. Liu, P. Kumamuru, **C. Hou**, et al., “Detecting the oscillation and propagation of the nascent dynamic solar wind structure at 2.6 solar radii using very long baseline interferometry radio telescopes”, *The Astrophysical Journal Letters* **940**, L32 (2022).

Conference Proceedings

- 1 **C. Hou**, A. Rouillard, J. He, B. Gannouni, and V. Réville, “Jet-flow fluctuations and plasma blobs as a mediator between interchange magnetic reconnection in solar corona and alfvénic velocity spikes in interplanetary space”, in *Asia oceania geosciences society (aogs)* (2023).
- 2 **C. Hou**, A. Rouillard, J. He, B. Gannouni, and V. Réville, “Connecting solar wind velocity spikes measured by solar orbiter and coronal bright points imaged by sdo”, in *Solarwind16 meeting* (2023).
- 3 **C. Hou**, A. Rouillard, J. He, B. Gannouni, and V. Réville, “Possible role of fluctuation excitation in the formation of alfvénic fluctuations originating from interchange magnetic reconnection”, in *Egu* (2023).
- 4 **C. Hou**, J. He, D. Duan, H. Li, and Y. Chen, “From magnetic reconnection at chromospheric network boundaries to switchbacks in the inner heliosphere”, in *Asia oceania geosciences society (aogs)* (2022).
- 5 **C. Hou**, J. He, D. Duan, H. Li, and Y. Chen, “From magnetic reconnection at chromospheric network boundaries to switchbacks in the inner heliosphere”, in *Egu general assembly conference abstracts* (2022), EGU22–9673.
- 6 **C. Hou**, J. He, D. Duan, and Y. Chen, “Synergic observations of magnetic reconnection in the solar corona and switchback in the inner heliosphere from sdo and parker solar probe”, in *Agu fall meeting abstracts*, Vol. 2021 (2021), SH35C–2099.
- 7 **C. Hou**, X. Zhu, R. Zhuo, and J. He, “Statistical differences of magnetic field kinks observed by psp and wind”, in *Egu general assembly conference abstracts* (2021), EGU21–14696.