Chuanpeng Hou PhD

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Peking University, Beijing, 100871, China

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
Hobbies Baseball, Softball

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**, 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).

2 **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. Livi, 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).

3 **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).

4 **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).

5 **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).

6 **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).

7 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).

8 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).

9 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).

10 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).

11 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).

12 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).

13 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).

14 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).

15 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).

16 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).

17. 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).

18. M. Ma, G. M. Calvés, G. Cimò, M. Xiong, P. Li, J. Kong, P. Zhang, J. He, L. Liu, P. Kummamuru, **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 mangetic 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.