

Hao Ran

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RESEARCH INTERESTS

- Solar wind, space plasma physics, interplanetary magnetic field, space weather.
- Solar flares, coronal mass ejections, filaments, active regions.
- Statistical methods, observational methods, and machine learning methods in solar physics and space science.

EDUCATION

- 2024.09 - present Ph.D. Student in Space Physics at **Mullard Space Science Laboratory, Department of Climate and Space Physics, University College London**
Supervisor: Prof. Daniel Verscharen
- 2021.09 - 2024.06 Master's Degree in Space Physics at **National Space Science Center, CAS & University of Chinese Academy of Sciences**
Supervisor: Prof. Ying Liu
- 2017.09 - 2021.06 Bachelor's Degree in Astronomy at **School of Astronomy and Space Science, Nanjing University**
Supervisor: Prof. Yang Guo

SELECTED TALKS

- 2025.10 **Invited Talk at Kiel University**
- *Kinetic Signatures of Ion-acoustic Instabilities in the solar wind: Measurements from Solar Orbiter*
- Kiel, Germany
- 2025.05 **In situ Heliospheric science meeting**
- *A Pipeline for Separating Solar Orbiter Proton Alpha-particle Sensor (PAS) Measurements*
- Lyon, France
- 2023.10 **1st ASO-S and CHASE Joint Conference**
- *The Alpha-Proton Differential Flow in the Alfvénic Young Solar Wind: From Sub-Alfvénic to Super-Alfvénic*
- Wuxi, Jiangsu Province, China.
- 2023.04 **20th National Solar-Terrestrial Space Science Seminar**
- *Relationship between Successive Flares in the Same Active Regions and SHARP Parameters*
- Fuzhou, Fujian Province, China.

AWARDS AND HONORS

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| 2024.04 | STFC Studentship | UK Research and Innovation |
| 2024.04 | UCL's International Scholar Awards for Doctoral Training Centers | University College London |
| 2023.10 | National Scholarship for Graduate Students | Chinese Academy of Sciences |
| 2023.04 | Excellent Paper for Young Researchers (4/57) | 20th National Solar-Terrestrial Space Science Seminar |
| 2021.09 | The Undergraduates' Scholarship | National Space Science Center, Chinese Academy of Sciences |
| 2019.04 | The People's Scholarship in China | Nanjing University |

SKILLS

Language Mandarin Chinese (Native); English (Fluent)
Programming Python (proficient), IDL, C, C++, Fortran, R, MATLAB, \LaTeX

REFERENCE

- **Prof. Daniel Verscharen**

Mullard Space Science Laboratory, University College London;
Holmbury Hill Rd, Dorking, RH5 6NT, United Kingdom;
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- **Prof. Ying Liu**

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No.1 Nanertiao Road, Zhongguancun, Haidian District, Beijing 100190, China;
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- **Prof. Yang Guo**

School of Astronomy and Space Science, Nanjing University;
No.163 Xianlin Road, Qixia District, Nanjing 210023, China;
guoyang@nju.edu.cn

PEER-REVIEWED PUBLICATIONS

As first author:

Hao Ran, Ying D. Liu, Yang Guo, and Rui Wang (Sept. 2022). “Relationship between Successive Flares in the Same Active Region and SHARP parameters”. In: *The Astrophysical Journal* 937.1, p. 43. URL: <https://iopscience.iop.org/article/10.3847/1538-4357/ac80fa>.

Hao Ran, Ying D. Liu, Chong Chen, and Parisa Mostafavi (Feb. 2024). “The Alpha-Proton Differential Flow in the Alfvénic Young Solar Wind: From Sub-Alfvénic to Super-Alfvénic”. In: *the Astrophysical Journal* 963, p. 82. URL: <https://doi.org/10.3847/1538-4357/ad2069>.

As significant-contributing author:

Liu, Ying D., **Hao Ran**, Huidong Hu, and Stuart D. Bale (Feb. 2023). “On the Generation and Evolution of Switchbacks and the Morphology of the Alfvénic Transition: Low Mach-number Boundary Layers”. In: *The Astrophysical Journal* 944.2, p. 116. DOI: [10.3847/1538-4357/acb345](https://doi.org/10.3847/1538-4357/acb345). URL: <https://dx.doi.org/10.3847/1538-4357/acb345>.

Liu, Ying D., Bei Zhu, **Hao Ran**, Huidong Hu, Mingzhe Liu, Xiaowei Zhao, Rui Wang, Michael L. Stevens, and Stuart D. Bale (Feb. 2024). “Direct In Situ Measurements of a Fast Coronal Mass Ejection and Associated Structures in the Corona”. In: *the Astrophysical Journal* 963, p. 85. URL: <https://doi.org/10.3847/1538-4357/ad1e56>.

Other co-authored papers:

Cheng, Wenshuai, Ying D. Liu, **Hao Ran**, Yiming Jiao, Michael L. Stevens, and Justin C. Kasper (Apr. 2024). “Origin and Properties of the Near Subsonic Solar Wind Observed by Parker SolarProbe”. In: *the Astrophysical Journal* 967, p. 58. URL: <https://iopscience.iop.org/article/10.3847/1538-4357/ad3b98>.

Jiao, Yiming, Ying D Liu, Wenshuai Cheng, **Ran, Hao**, and Rui Wang (2024a). “On the Acceleration of the Young Solar Wind from Different Source Regions”. In: *The Astrophysical Journal Letters* 975.2, p. L41. URL: <https://iopscience.iop.org/article/10.3847/2041-8213/ad85ea>.

Jiao, Yiming, Ying D. Liu, **Ran, Hao**, and Wenshuai Cheng (Jan. 2024b). “Properties of Steady Sub-Alfvénic Solar Wind in Comparison with Super-Alfvénic Wind from Parker Solar Probe Measurements”. en. In: *The Astrophysical Journal* 960.1, p. 42. DOI: [10.3847/1538-4357/ad0dfe](https://doi.org/10.3847/1538-4357/ad0dfe). URL: <https://iopscience.iop.org/article/10.3847/1538-4357/ad0dfe>.

Cheng, Wenshuai, Ming Xiong, Yiming Jiao, **Ran, Hao**, Liping Yang, Huidong Hu, and Rui Wang (July 2025). “Inertial-range Turbulence Anisotropy of the Young Solar Wind from Different Source Regions”. In: *The Astrophysical Journal Letters* 988.1, p. L15. URL: <https://iopscience.iop.org/article/10.3847/2041-8213/adeb8a>.

OUTRESEARCH EXPERIENCE

1. **Volunteer teaching in rural areas.** (Guizhou & Sichuan) 2018.07 & 2019.07
 - Responsible for the *Introduction to Astronomy* Course.
 - Obtained the ”*Most Welcomed Teacher*” award.
2. **Amateur soccer player.** (Nanjing University) 2017.09 - 2021-06
 - Second place in the Nanjing University Champions League. (Season 2018-2019)
 - First place in the Nanjing University Champions Cup. (Season 2017-2018)