Xingyu ZHU

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Education

- **Peking University, Beijing, China** 09/2020 – 07/2023
  Ph.D.
  Supervisor: Prof. Jiansen He
- **MSSL, University College London, Dorking, UK** 10/2021 – 10/2022
  Visiting Scholar
  Supervisor: Prof. Daniel Verscharen
- **Peking University, Beijing, China** 09/2017 – 07/2020
  M.S.
  Supervisor: Prof. Jiansen He
- **Peking University, Beijing, China** 09/2013 – 07/2017
  B.S.

Research Interests

Origin and evolution of solar wind.
MHD and kinetic turbulence in the heliosphere.
Wave-particle interactions in the heliosphere.
Magnetic reconnection in the interplanetary space.
Particle acceleration and transport.

List of Publications

Xingyu Zhu, Gary P. Zank, Lingling Zhao, & Ashok Silwal. Radial Evolution of MHD Turbulence Anisotropy in Low Mach Number Solar Wind[J]. The *Astrophysical Journal Letters*, 978.2(2025): L34.

Xingyu Zhu, Jiansen He, Gary P. Zank, Daniel Verscharen, Ling-ling Zhao, Die Duan, & Rong Lin. Evolution of the Interplanetary Turbulence and the Associated Turbulence Anisotropy in the Outer Heliosphere: VOYAGER 2 Observations. *The Astrophysical Journal* 966.1(2024): 88.

Xingyu Zhu, Jiansen He, Die Duan, Daniel Verscharen, Christopher J. Owen, Andrey Fedorov, Philippe Louarn & Timothy S. Horbury. Non-field-aligned Proton Beams and Their Roles in the Growth of Fast Magnetosonic/Whistler Waves: Solar Orbiter Observations. *The Astrophysical Journal*, 953.2(2023): 161.

Xingyu Zhu, Daniel Verscharen, Jiansen He, Bennett A. Maruca, Christopher J. Owen. Regulation of Proton-α FLow by Compressive Fluctuations and Ion-scale Instabilities in the Solar Wind. *The Astrophysical Journal* (2022)

Qiaowen Luo, **Xingyu Zhu**, Jiansen He, Jun Cui, Hairong Lai, Daniel Verscharen, Die Duan. Coherence of Ion Cyclotron Resonance in Damped Ion Cyclotron Waves in Space Plasmas. *The Astrophysical Journal* 928, no. 1(2022): 36. [**Co-first author**]

Xingyu Zhu, Jiansen He, Daniel Verscharen, Die Duan, and Stuart D. Bale. Wave Composition, Propagation, and Polarization of Magnetohydrodynamic Turbulence within 0.3 au as Observed by Parker Solar Probe. *The Astrophysical Journal Letters* 901, no. 1 (2020): L3.

Xingyu Zhu, Jiansen He, Ying Wang, and Luca Sorriso-Valvo. Difference of Intermittency between Electric Field and Magnetic Field Fluctuations from Ion Scale Down to Sub-electron Scale in the Magnetosheath Turbulence. *The Astrophysical Journal* 893, no. 2 (2020): 124.

Xingyu Zhu, Jiansen He, Daniel Verscharen, and Jinsong Zhao. Composition of wave modes in magnetosheath turbulence from sub-ion to sub-electron scales. *The Astrophysical Journal* 878, no. 1 (2019): 48.

Jiansen He, **Xingyu Zhu**, Qiaowen Luo, Chuanpeng Hou, Daniel Verscharen, Die Duan, Wenya Li, Jinsong Zhao, Tieyan Wang, Daniel B. Graham, Qiugang Zong, Zhonghua Yao. Observations of Rapidly Growing Whistler Waves in front of Space Plasma Shock. *The Astrophysical Journal* 941.2 (2022): 147.

Jiansen He, **Xingyu Zhu**, Liping Yang, Chuanpeng Hou, Die Duan, Lei Zhang, and Ying Wang. Solar Origin of Compressive Alfvénic Spikes/Kinks as Observed by Parker Solar Probe. *The Astrophysical Journal Letters* 913, no. 1 (2021): L14.

Jiansen He, **Xingyu Zhu**, Daniel Verscharen, Die Duan, Jinsong Zhao, and Tieyan Wang. Spectra of diffusion, dispersion, and dissipation for kinetic Alfvénic and compressive turbulence: comparison between kinetic theory and measurements from MMS. *The Astrophysical Journal* 898, no. 1 (2020): 43.

Jiansen, He, **Xingyu Zhu**, Yajie Chen, Chadi Salem, Michael Stevens, Hui Li, Wenzhi Ruan, Lei Zhang, and Chuanyi Tu. Plasma heating and Alfvénic turbulence enhancement during two steps of energy conversion in magnetic reconnection exhaust region of solar wind. *The Astrophysical Journal* 856, no. 2 (2018): 148.

Jiansen He, Ying Wang, **Xingyu Zhu**, Die Duan, Daniel Verscharen, Guoqing Zhao. Growth of Outward Propagating Fast-magnetosonic/Whistler Waves in the Inner Heliosphere Observed by Parker Solar Probe. *The Astrophysical Journal* 933, no. 2 (2022): 220.

Chuanpeng Hou, Jiansen He, **Xingyu Zhu**, and Ying Wang. Contribution of Magnetic Reconnection Events to Energy Dissipation in Space Plasma Turbulence. *The Astrophysical Journal* 908, no. 2 (2021): 237.

Qiaowen Luo, Jiansen He, Jun Cui, **Xingyu Zhu**, Die Duan, and Daniel Verscharen. Energy Conversion between Ions and Electrons through Ion Cyclotron Waves and Embedded Ion-scale Rotational Discontinuity in Collisionless Space Plasmas. *The Astrophysical Journal Letters* 904, no. 2 (2020): L16.

Jiansen He, Die Duan, Tieyan Wang, **Xingyu Zhu**, Wenya Li, Daniel Verscharen, Xin Wang, Chuanyi Tu, Yuri Khotyaintsev, Guan Le and Jim Burch. Direct measurement of the dissipation rate spectrum around ion kinetic scales in space plasma turbulence. *The Astrophysical Journal* 880, no. 2 (2019): 121.

Zhiyang Liu, Qiugang Zong, Robert Rankin, Hui Zhang, Yongfu Wang, Xuzhi Zhou, Suiyan Fu, Chao Yue, **Xingyu Zhu**, C. J. Pollock, Stephen A. Fuselier, Guan Le. Simultaneous macroscale and microscale wave–ion interaction in near-earth space plasma. *Nature communications* 13, no. 1 (2022): 1-9.

Jiutong Zhao, Qiugang Zong, Chao Yue, Xuzhi Zhou, Zhiyang Liu, Weijie Sun, James A. Slavin, Jim M. Raines, **Xingyu Zhu**. ULF Modulations on Plasma Environment and Coherent Waves of Mercury's Magnetosphere: MESSENGER's Observation. *Journal of Geophysical Research: Space Physics* 127 (2022): e2021JA030253.

Honors and Awards

2024 International Astronomical Union (IAU) PhD Prize Honorable Mention

2023 Outstanding Graduate Award, Peking University, Beijing, China

2022 Merit Student, Peking University, Beijing, China

2021 Third-grade Scholarship, Peking University, Beijing, China

2021 Merit Student, Peking University, Beijing, China

2021 Outstanding Student Talk, The 7th Youth Geoscience Forum Conference, China

2021 President Scholarship, Peking University, Beijing, China

2020 Merit Student, Peking University, Beijing, China

2019 Outstanding Paper Award, The 18th National Symposium on Solar-Terrestrial Space Physics, China

2019 Merit Student, Peking University, Beijing, China

2018 Award for Scientific Research, Peking University, Beijing, China

Scientific Activity

AGU 2020 (*Oral*), 2021 (*Oral*), 2024 (*Poster*)

EGU 2019 (*Oral*), 2021 (*Poster*), 2022 (*Oral*)

AOGS 2019 (*Poster*), 2022 (*Oral*)

AAPPS-DPP 2020 (*Oral*)

Parker One 2021 (*Poster*)