Jing-Huan Li, Ph.D. candidate

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+86 18810908511 October 29, 1997
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Education

2019 – · · · · **Ph.D., Peking University** Magnetospheric Physics.

2015 – 2019 **B.S., Peking University** Space physics.

Courses

2019-2020 Fall
Magnetospheric Physics;
Space Plasma Physics;
Ionospheric Physics;
Solar Physics;
Introduction to Space Sciences and Applications;
Academic English Writing For Graduate Students.

2019-2020 Spring
Physics of High-energy Particles in Space;
Heliosphere and Interstellar Medium;
Physics and Photochemistry of the Middle and Upper Atmosphere;
Information Technology for Space physics.

2020-2021 Fall
Scientific Paper Writing Guidance and Academic Norms in Space Science;
Seminar of Space Physics.

Research Experience

Bachelor project; Supervised by Dr. Xu-Zhi Zhou

2017.5-2019.6 Electron- and ion-scale, nested magnetic cavities: Manifestation of cross-scale theta-pinches in space plasmas.

PhD projects: Equilibrium model for magnetic cavities; Supervised by Dr. Xu-Zhi Zhou

2019.9-2021.2 Construct self-consistent kinetic models to describe the nested and helical magnetic cavities, respectively, and investigate the 90°-concentrated and donut-shaped electron pitch angle distributions.

2023.1-2023.7 Use the self-consistent kinetic model above to reconstruct an ion-vortex magnetic hole with reversed field direction.

PhD projects: wave-particle interactions; Supervised by Dr. Xu-Zhi Zhou

2020.5-··· Use the MMS spacecraft measurements to identify the Landau and anomalous resonances from the direct observations.

2022.5-··· Understand the cross-scale energy transfer via multiple wave-particle interactions.

Research Publications

First and corresponding author articles

1. **J.-H. Li**, Z. Xu-Zhi, Z.-Y. L. Liu, S. Wang, and other authors, "Direct observations of cross-scale energy transfer in space plasmas," *Nature Astronomy*, 2023, submitted.
2. **J.-H. Li**, Z. Xu-Zhi, Z.-Y. L. Liu, S. Wang, and other authors, "Identification of coupled landau and anomalous resonances in space plasmas," *Physical Review Letters*, 2023, Under review.
3. **J.-H. Li**, Z. Xu-Zhi, S. Wang, and other authors, "Direct evidence of cross-scale energy transfer upstream of nonstationary shocks," 2023, To be submitted.
4. S. Yao, **J.-H. Li**, X.-Z. Zhou, *et al.*, "Ion-vortex magnetic hole with reversed field direction in earth's magnetosheath," *Journal of Geophysical Research: Space Physics*, vol. 128, no. 7, e2023JA031749, 2023.
5. **J.-H. Li**, Z.-Y. Liu, X.-Z. Zhou, *et al.*, "Anomalous resonance between low-energy particles and electromagnetic plasma waves," *Communications Physics*, vol. 5, no. 1, p. 300, 2022.
6. **J.-H. Li**, X.-Z. Zhou, F. Yang, A. V. Artemyev, and Q.-G. Zong, "Helical magnetic cavities: Kinetic model and comparison with mms observations," *Geophysical Research Letters*, vol. 48, no. 6, e2021GL092383, 2021.
7. **J.-H. Li**, X.-Z. Zhou, Q.-G. Zong, *et al.*, "On the origin of donut-shaped electron distributions within magnetic cavities," *Geophysical Research Letters*, vol. 48, no. 2, e2020GL091613, 2021.
8. **J.-H. Li**, F. Yang, X.-Z. Zhou, *et al.*, "Self-consistent kinetic model of nested electron-and ion-scale magnetic cavities in space plasmas," *Nature Communications*, vol. 11, no. 1, p. 5616, 2020.

Conferences

Conference Presentations

1. **J.-H. Li**, "Anomalous resonance between low-energy particles and electromagnetic plasma waves, aogs 2023," in *Asia Oceania Geosciences Society 2023)*, Oral presentation, Singapore, 2023.
2. **J.-H. Li**, "Helical magnetic cavities: Kinetic model and comparison with mms observations," in *European Geosciences Union 2021)*, Oral presentation, Online, 2021.
3. **J.-H. Li**, "Helical magnetic cavities: Kinetic model and comparison with mms observations," in *American Geophysical Union 2021)*, Oral presentation, Online, 2021.
4. **J.-H. Li**, "On the origin of donut-shaped electron distributions within magnetic cavities," in *American Geophysical Union 2020)*, Oral presentation, Online, 2021.
5. **J.-H. Li**, "Electron- and proton-scale nested magnetic cavities: Manifestation of kinetic theta-pinch equilibrium in space plasmas," in *European Geosciences Union 2020)*, Oral presentation, Online, 2020.

Skills

Languages — Mandarin Chinese, fluent English

Coding — Matlab, Python, IDL, LaTeX, Fortran, …

Miscellaneous Experience

Awards and Achievements

2016 — **Zeng Xianzi Scholarship**, Peking University.

Miscellaneous Experience (continued)

- **Merit Student of Academic Year 2015-2016**, Peking University.

2021

- **President's Scholarship (for Ph.D. student)**, Peking University.
- **Merit Student of Academic Year 2020-2021**, Peking University.
- **Suzhou Industrial Park Scholarship**, Peking University.

Other Professional experiences

2018.9.22-24 Visiting **University of Kiel** (Christian-Albrechts-Universität zu Kiel) in Kiel, Germany and presented an oral report

2018.9.25-28 Visiting **Max-Planck Institute for Solar System Research** in Göttingen, Germany and presented an oral report

2018.10.1 Visiting **Helmholtz-Centre Potsdam - German Research Centre for Geosciences (GFZ)** in Potsdam, Germany and presented an oral report