

SHORT BIO

I began my space science research in 2012 as a Master's/PhD student under the supervision of Prof. Zhengyu Zhao and Prof. Binbin Ni at the Laboratory of Magnetospheric Space Weather and Effects (LMSWE), Wuhan University, China.

After obtaining my PhD in Space Physics, I joined the Institute of Space Science and Applied Technology (ISSAT) at Harbin Institute of Technology, Shenzhen, in 2018 as a postdoctoral researcher, where I investigated the dynamics of Earth's radiation belt particles and plasma waves.

In 2021, I was appointed Assistant Professor at the State Key Laboratory of Lunar and Planetary Sciences, Macau University of Science and Technology (MUST). My current research combines traditional space physics approaches with machine learning algorithms to study the temporal evolution of energetic electrons and wave-particle interactions in Earth's radiation belts. I also teach several postgraduate courses.

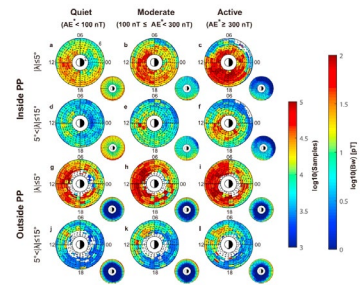
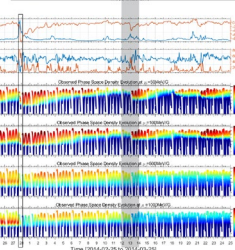
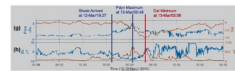
Asst. Prof.

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PhD: Space Physics – Wuhan University

MSc: Space Physics – Wuhan University



KEY PUBLICATIONS (First or corresponding Author)

Yuan Q., Zou Z. (Corr*), San W., Hu J., Zhu B., 2025, Predicting radiation belt relativistic electron flux from subrelativistic electron fluxes using machine learning, *Physics of Fluids* 37, 026618.

San W., Zou Z. (Corr*), Yuan Q., Hu J., Zhu B., 2024, Prediction of radiation belt relativistic electron phase space density using artificial neural networks, *Physics of Fluids* 37, 016615.

Zou Z., Hu J., San W., Yuan Q., 2024, Partial loss and significant depletion of radiation belt electrons during the April 4, 2017, geomagnetic storm, *Physics of Fluids* 36, 126603.

Zou Z., Zuo P., Ni B. et al, 2024, Competition Between the Source and Loss Processes of Radiation Belt Source, Seed, and Relativistic Electrons Induced by a Magnetic Cloud Event, *Physics of Fluids*, 36, 026603.

Zou Z., Gao Z., Zuo P., Ni B., 2021, Wang G., Zhao Z., Feng X., Wei F., Jiang C., Wang Y., Evidence of Wave-wave Coupling Between Frequency Harmonic Bands of Magnetosonic Waves. *Phys of Plasma, Physics of Plasma*, 28(12), 122903.

Zou Z., Shprits Y. Y., Aseev. N., Wei F., 2020, An Artificial Neural Network Model of Electron Fluxes in The Earth's Central Plasma Sheet: A THEMIS Survey, *Astrophysics and Space Science*, 365, 100.

Zou Z., Zuo P., Ni B., Gao Z., Wang G., Zhao Z., Feng X., Wei F., 2020, Two-step Dropouts of Radiation Belt Electron Phase Space Density Induced by a Magnetic Cloud Event, *Astrophysical Journal Letters*, 895, L24.

Zou Z., Zuo P., Ni B., Wei F. et al., 2019, Wave Normal Angle Distribution of Fast Magnetosonic Waves: A Survey of Van Allen Probes EMFISIS Observations, *Journal of Geophysical Research: Space Physics*, 124, 7, 5663-5674.

PROFESSIONAL EXPERIENCE

2021 – present – Macau University of Science and Technology, Macao, China – Asst. Prof.

2018 – 2020 – Harbin Institute of Technology, Shenzhen, China – Post Doctoral

GRANTS

FDCT&NSFC – 2024-2027 – PI : Analysis and Simulations of the Inner Radiation Belt Energetic Particle Evolutions based on Macau Science Satellite-1 Data

FDCT – 2024-2026 – PI : Analysis and Simulations of Bump-on-tail Spectra for Electron Phase Space Density in Earth Radiation Belt

FDCT – 2021-2024 – PI : Response of the Earth radiation belt to the solar wind disturbances during non-storm times