

# Hongyang Zhou

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## EMPLOYMENT

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<b>Boston University</b> Research Scientist	Boston, MA 2023/10-now
<b>University of Helsinki</b> Postdoctoral Researcher	Helsinki, Finland 2020/11-2023/05
<b>University of Michigan</b> Research Assistant	Ann Arbor, MI 2015/08-2020/09

## EDUCATION

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<b>University of Michigan</b> Ph.D of Climate and Space Sciences and Scientific Computing	Ann Arbor, MA 2015/08-2020/09
<b>University of Science and Technology of China (USTC)</b> Bachelor of Geophysics	Anhui, China 2011/09-2015/06

## AWARDS

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<b>University of Michigan</b> Climate and Space Sciences Outstanding Doctoral Student Research Award	2020
<b>University of Michigan</b> Michigan Institute for Computational Discovery and Engineering Fellowship	2016
<b>USTC</b> Outstanding Teaching Scholarship	2015
<b>USTC</b> The First Prize, Outstanding Student Scholarship	2014

## EXPERIENCE

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<b>Planetary Magnetosphere Modeling</b> <i>Supervisor: Chuanfei Dong</i> <ul style="list-style-type: none"><li>Studying Earth and planetary magnetospheres with numerical simulations</li><li>Developing kinetic shock and foreshock models</li></ul>	2023/10-now
<b>Hybrid Vlasov Ultra-Low Frequency (ULF) Wave Simulations</b> <i>Supervisor: Lucile Turc &amp; Minna Palmroth</i> <ul style="list-style-type: none"><li>Developed time-varying boundary conditions in <a href="#">Vlasiator</a> and the postprocessing package <a href="#">Vlasiator.jl</a></li><li>Studied ULF waves properties in Earth's magnetosheath and foreshock using global 2D simulations</li></ul>	2020/11-2023/05
<b><a href="#">SWMF</a> Model Development</b> <i>Supervisor: Gábor Tóth</i> <ul style="list-style-type: none"><li>Developed new boundary setups and extended MPI-OpenMP parallel code capability for <a href="#">BATS-R-US</a></li><li>Developed an open-source package <a href="#">Batsrus.jl</a> for efficient data processing, analysis and visualization</li><li>Initiated a GPU-portable magnetohydrodynamic (MHD) solver with OpenACC, OpenMP &amp; CUDA</li></ul>	2015-2020
<b>MHD-EPIC Simulation of Ganymede's Magnetosphere</b> <i>Supervisor: Gábor Tóth &amp; Xianzhe Jia</i> <ul style="list-style-type: none"><li>Constructed a global magnetosphere model by coupling Hall MHD with Particle-In-Cell in generalized coordinates</li><li>Analyzed the magnetic reconnection processes at Ganymede</li></ul>	2016-2020

## TEACHING

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## Space Applications of Plasma Physics

Guest Lecturer

University of Helsinki

2022

## Plasma Physics

Guest Lecturer

University of Helsinki

2022

## Electrodynamics

Teaching Assistant

USTC

2015

## SELECTED PUBLICATIONS

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Kinetic signatures, dawn-dusk asymmetries, and flux transfer events associated with Mercury's dayside magnetopause reconnection from 3D MHD-AEPIC simulations

*Li, Changkun and Jia, Xianzhe and Chen, Yuxi and Tóth, Gábor and Zhou, Hongyang and Slavin, James A and Sun, Weijie and Poh, Gangkai*, JGR, 2024

Dayside Pc2 Waves Associated With Flux Transfer Events in a 3D Hybrid-Vlasov Simulation

*Tesema, Facil and Palmroth, Minna and Turc, Lucile and Zhou, Hongyang and Cozzani, Giulia and Alho, Markku and Pfau-Kempf, Yann and Horaites, Konstantinos and Zaitsev, Ivan and Grandin, Maxime*, GRL, 2024

Vlasiator. jl: A Julia package for processing Vlasiator data

**Zhou, Hongyang**, Journal of Open Source Software, 2023

FLEKS: A flexible particle-in-cell code for multi-scale plasma simulations

*Chen, Yuxi and Tóth, Gábor and Zhou, Hongyang and Wang, Xiantong*, CPC, 2023

Magnetospheric Response to a Pressure Pulse in a Three-Dimensional Hybrid-Vlasov Simulation

*Horaites, Konstantinos and Rintamäki, E and Zaitsev, I and Turc, L and Grandin, M and Cozzani, G and Zhou, H and Alho, M and Suni, J and Kebede, F and others*, JGR, 2023

Magnetotail plasma eruptions driven by magnetic reconnection and kinetic instabilities

*Palmroth, Minna and Pulkkinen, Tuija I and Ganse, Urs and Pfau-Kempf, Yann and Koskela, Tuomas and Zaitsev, Ivan and Alho, Markku and Cozzani, Giulia and Turc, Lucile, Zhou, Hongyang and others*, Nature Geoscience, 2023

Magnetospheric responses to solar wind Pc5 density fluctuations: Results from 2D hybrid Vlasov simulation

**Zhou, Hongyang and Turc, Lucile and Pfau-Kempf, Yann and Battarbee, Markus and Tarvus, Vertti and Dubart, Maxime and George, Harriet and Cozzani, Giulia and Grandin, Maxime and Ganse, Urs, Frontiers in Astronomy and Space Sciences, 2022**

A global view of Pc3 wave activity in near-Earth space: Results from hybrid-Vlasov simulations

*Turc, Lucile and Zhou, Hongyang and Tarvus, Vertti and Ala-Lahti, Matti and Battarbee, Markus and Pfau-Kempf, Yann and Johlander, Andreas and Ganse, Urs and Dubart, Maxime and George, Harriet and others*, Frontiers in Astronomy and Space Sciences, 2022

Reconnection-driven dynamics at Ganymede's upstream magnetosphere: 3-D global Hall MHD and MHD-EPIC simulations

**Zhou, Hongyang and Tóth, Gábor and Jia, Xianzhe and Chen, Yuxi**, JGR, 2020

Efficient OpenMP parallelization to a complex MPI parallel magnetohydrodynamics code

**Zhou, Hongyang and Tóth, Gábor**, Journal of Parallel and Distributed Computing, 2020

Embedded kinetic simulation of Ganymede's magnetosphere: Improvements and inferences

**Zhou, Hongyang and Tóth, Gábor and Jia, Xianzhe and Chen, Yuxi and Markidis, Stefano**, JGR, 2019

## SKILLS

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**Programming Languages** - Julia, Fortran, C, C++, MATLAB, Python, IDL, CUDA, Rust, Perl, LaTeX

**3D Visualization Tools** - Paraview, VisIt, Tecplot

**Languages** - English, Mandarin