

# Xiaohang Chen

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## *Education*

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<b>University of Arizona</b>	<i>Tucson, AZ</i>
Ph.D. in Planetary Science (Expected completion Fall 2023)	08/2018 – Present
M.S. in Planetary Science	05/2021
Advisor: Joe Giacalone	
<b>Beihang University</b>	<i>Beijing, China</i>
B.S. in Astronautics	08/2014 – 05/2018
Advisor: Huishan Fu	

## *Research Experience*

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<b>University of Arizona</b>	<i>Tucson, AZ</i>
Graduate Research Assistant	08/2018 – Present
Advisor: Joe Giacalone	
<ul style="list-style-type: none"><li>Modeled the spatial and temporal evolution of solar energetic particle acceleration and transport at CME-driven shocks.</li><li>Calculated the parallel diffusion coefficient as a function of radial distance based on Parker Solar Probe observations and quasi-linear theory.</li><li>Combined the Parker transport equation and data-driven MHD model to simulate solar energetic particle acceleration from the Sun to 1 AU and compare with the multi-spacecraft observations at widely separated heliolongitudes.</li></ul>	
<b>Los Alamos National Laboratory</b>	<i>Los Alamos, NM</i>
Research Intern	05/2022 – 08/2022
Advisor: Fan Guo	
<ul style="list-style-type: none"><li>Used the particle-in-cell model (VPIC) to study both electron and proton acceleration at quasi-perpendicular and parallel shocks.</li></ul>	
<b>Harvard–Smithsonian Center for Astrophysics</b>	<i>Cambridge, MA</i>
Research Intern	05/2022
Advisor: Federico Fraschetti	
<ul style="list-style-type: none"><li>Mentored a high-school student to study the velocity dispersion of energetic particle events observed by Parker Solar Probe as a function of the radial distance and spacecraft velocity.</li></ul>	
<b>Beihang University</b>	<i>Beijing, China</i>
Undergraduate Research Assistant	08/2016-05/2018
Advisor: Huishan Fu	
<ul style="list-style-type: none"><li>Studied the properties of magnetic null topology in the magnetic reconnection driven by turbulence</li></ul>	

## *Teaching Experience*

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<b>University of Arizona</b>	<i>Tucson, AZ</i>
Graduate Teaching Assistant	Fall 2019
Course: The Universe and Humanity: Origin and Destiny (PTYS/ASTR 170B2)	
Lecturer: Tommi Koskinen	

## *Publications*

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**Chen, X.**, J. Giacalone, and F. Guo (2022), Solar Energetic Particle Acceleration at a Spherical Shock with the Shock Normal Angle Evolving in Space and Time, *ApJ*, 941(1), 23.

Wang, Z., H. Fu, **X. Chen**, J. Cao, Y. Liu, Y. Yu, R. He, and Z. Guo (2022), The Effect of Current on Magnetic Null Topology during Turbulent Reconnection, *ApJ*, 927(1), 119.

Guo, F., S. Antiochos, P. Cassak, B. Chen, **X. Chen**, C. Dong, C. Downs, J. Giacalone, C. C. Haggerty, et al. (2022), Advancing Theory and Modeling Efforts in Heliophysics, White paper submitted to Heliophysics 2024 Decadal Survey.

Giacalone, J., Mitchell, D. G., Allen, R. C., Hill, M. E., McNutt, R. L., Szalay, J. R., Desai, M. I., Rouillard, A. P., Kouloumvakos, A., McComas, D. J., Christian, E. R., Schwadron, N. A., Wiedenbeck, M. E., Bale, S., Brown, L. E., Case, A., **Chen, X.**, et al. (2020), Solar Energetic Particles Produced by a Slow Coronal Mass Ejection at  $\sim 0.25$  au, *ApJS*, 246(2), 29.

Fu, H., Z. Wang, Q. Zong, **X. Chen**, J. He, A. Vaivads, and V. Olshevsky (2020), Methods for Finding Magnetic Nulls and Reconstructing Field Topology: A Review, In *Dayside Magnetosphere Interactions* (eds Q. Zong, P. Escoubet, D. Sibeck, G. Le and H. Zhang).

**Chen, X.**, H. Fu, C. Liu, D. Cao, Z. Wang, M. Dunlop, Z. Chen, and F. Peng (2017), Magnetic nulls in the reconnection driven by turbulence, *ApJ*, 852(1), 17.

## *Presentations*

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**Chen, X.**, J. Giacalone & F. Guo (2022). Solar Energetic Particle Acceleration at a Spherical Shock with the Shock Normal Angle Evolving in Space and Time. AGU Fall Meeting, Chicago, IL (Poster)

**Chen, X.**, J. Giacalone, F. Guo, D. Lario, et al. (2022). The Spatial and Temporal Evolution of Solar Energetic Particles at a CME-Driven Shock. 20<sup>th</sup> Annual International Astrophysics Conference (AIAC), Santa Fe, NM (Oral)

**Chen, X.**, J. Giacalone & F. Guo (2022). Solar Energetic Particle Acceleration at a Spherical Shock with the Shock Normal Angle Evolving in Space and Time. Parker Solar Probe Working Group for Large Scale Structures, Virtual (Oral, invited)

**Chen, X.**, A. Kouloumvakos, J. Giacalone, D. Lario & A. Rouillard (2022). Solar Energetic Particles (SEP) Acceleration in the Ground Level Enhancement Event on 2017/09/10: A 3D simulation. Solar Heliospheric and INterplanetary Environment (SHINE) Workshop, Honolulu, HI (Poster)

**Chen, X.**, & J. Giacalone (2022). Parallel Diffusion Coefficient as a Function of Radial Distance from Parker Solar Probe Observations. 2<sup>nd</sup> Annual Parker Solar Probe Community Workshop (Parker Two), Laurel, MD (Poster)

**Chen, X.**, & J. Giacalone (2021). Solar Energetic Particle Acceleration at a Spherical Shock Driven by Fast and Wide Coronal Mass Ejection. AGU Fall Meeting, New Orleans, LA (Oral)

**Chen, X.**, & J. Giacalone (2021). Solar Energetic Particle Acceleration at a Spherical Shock Driven by Fast and Wide Coronal Mass Ejection. Solar Heliospheric and INterplanetary Environment (SHINE) Workshop, Virtual (Poster)

**Chen, X.**, J. Giacalone, D. Lario, & R.Y. Kwon (2020). Solar Energetic Particle Acceleration at Shock Waves Driven by Fast and Wide Coronal Mass Ejections. AGU Fall Meeting, Virtual (Poster)

**Chen, X.**, & J. Giacalone (2019). SEPs Acceleration at a Spherical CME-Driven Shock in which

$\theta_{Bn}$  Varies along its Surface. AGU Fall Meeting, San Francisco, CA (Poster)

Giacone, J., D.G. Mitchell, J.R. Szalay, R.C. Allen, et al. (2019). Parker Solar Probe Observations of Solar Energetic Particles Associated with a Slow Coronal Mass Ejection at 0.25 AU. AGU Fall Meeting, San Francisco, CA (Oral)

Chen, X., & J. Giacalone (2019). Transport of SEPs from Time-varying Sources Near the Sun. Solar Heliospheric and INterplanetary Environment (SHINE) Workshop, Boulder, CO (Poster)

Chen, X., H. Fu, C. Liu, et al. (2017). Magnetic Nulls in the Reconnection Driven by Turbulence. Annual Meeting of Chinese Geoscience Union (CGU), Beijing, China (Oral)

### *Awards & Honors*

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<b>Curson Travel Award</b> <i>Lunar and Planetary Laboratory, University of Arizona</i>	2022
<b>Galileo Circle Scholarship</b> <i>University of Arizona</i>	2020
<b>Feng Ru Cup Prize</b> <i>Beihang University</i>	2018
<b>Li Jinji's Scholarship</b> <i>Beihang University</i>	2017