

# Chen Shi

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**EMPLOYMENT**    **University of California, Los Angeles**, Los Angeles, California, U.S.  
*Postdoctoral Researcher*  
2020-now

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**EDUCATION**    **University of California, Los Angeles**, Los Angeles, California, U.S.  
*Doctor of Philosophy*, Geophysics and Space Physics  
2015-2020  
*Thesis: Magnetic Reconnection and Turbulence in the Inner Heliosphere*  
*Advisor: Marco Velli*

**Peking University**, Beijing, China  
*Bachelor of Science*, Space Physics  
2011-2015

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**SKILLS**    **Programming languages:** Expert at **C/C++**, **Fortran**, **Python**, & **IDL**; familiar with **MATLAB** & **MATHEMATICA**

**Proficient at:** MHD simulation and theory; Parallel computing (MPI & OpenMP) including SLURM; Data science

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**AWARDS**    [1] *Vincenzo Ferraro Award for best PhD thesis*, 2021  
[2] *EPSS department fellowship*, 2015, UCLA  
[3] *Outstanding College Student of Beijing*, 2014, Bureau of Education of Beijing

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**GRANTS & PROJECTS**    [1] *3D Magnetohydrodynamic Simulations of Magnetic Reconnection and Turbulence in the Heliosphere*, Extreme Science And Engineering Discovery Environment (XSEDE) #TG-AST200031, Principal Investigator

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**MEDIA REPORT**    [1] *UCLA researchers use UC San Diego-based resource to simulate solar wind behavior*, Kimberly Mann Bruch, [San Diego Supercomputer Center News Releases](#), 2021

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**OUTREACHES**    [1] *Booth: Our Exciting Sun!* at 10th annual EXPLORE YOUR UNIVERSE, Nov 4th, 2018, UCLA  
[2] *Evening in the Lab* at Plasma Science and Technology Institute, Dec 3th, 2019, UCLA

- [3] *Booth: Our Magnetic Sun* at EXPLORE YOUR UNIVERSE 2020, Nov 1st, 2020, UCLA
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**TEACHING  
EXPERIENCES**

- [1] Invited lecture on *Resistive tearing mode instability and magnetic reconnection*, October 28, 2021, University of Science and Technology of China
- [2] Student day tutorial talk: *MHD waves and turbulence in the expanding solar wind*, SHINE Conference, 2019, Boulder, Colorado
- [3] Teaching assistant & lab instructor, *Oceanography*, 2016 spring quarter, UCLA
- [4] Instructed junior PhD and undergraduate students to conduct scientific research
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**RESEARCH  
EXPERIENCES**

- [1] Linear stability analysis and nonlinear MHD/Hall-MHD simulations of tearing mode instability under different configurations of magnetic field and plasma flows
- [2] Simulations of MHD turbulence in different environments including the solar wind and the Earth's magnetosheath
- [3] Analysis of Parker Solar Probe data and OMNI2 database to study the properties of solar wind turbulence
- [4] Development of 3D MHD simulation codes with different algorithms including spectral, finite difference, and finite volume methods
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**SEMINARS &  
SELECTED  
TALKS**

- [1] *Evolution of MHD turbulence in the solar wind: Parker Solar Probe observations and numerical simulations*, Space Physics Seminar of UCLA, Oct 1, 2021
- [2] *Evolution of MHD turbulence in the solar wind: Parker Solar Probe observations and numerical simulations*, Space Plasma Seminar, Space Research Institute of the Russian Academy of Sciences, Nov 1, 2021
- [3] *Stability of the magnetotail current sheet with normal magnetic field and field-aligned plasma flows*, Space Plasma Seminar, Space Research Institute of the Russian Academy of Sciences, Jun 7, 2021
- [4] *Large-scale structures and their effects on the evolution of solar wind turbulence*, High Altitude Observatory (HAO) Colloquium, Boulder, Colorado, Jan 15, 2020
- [5] *Patches of the magnetic switchbacks: hints of their origins*, AGU Fall Meeting, *invited*, 2021
- [6] *Ions and electron temperatures in the solar wind and their correlations with the solar wind speed*, AGU Fall Meeting, 2021
- [7] *MHD Turbulence in the Solar Wind: Observations from First Five Encounters of Parker Solar Probe*, AGU Fall Meeting, 2020, Virtual Meeting
- [8] *Propagation of Alfvén waves and evolution of turbulence in the expanding solar wind with the presence of stream interaction*, AGU Fall Meeting, 2019, San Francisco, California
- [9] *Onset and nonlinear evolution of fast reconnection: Lundquist number and Hall effects*, AOGS 15th Annual Meeting, 2018, Honolulu, Hawaii
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SELECTED  
PUBLICATIONS

- [1] *Stability of the magnetotail current sheet with normal magnetic field and field-aligned plasma flows*, Shi, C., Artemyev, A., Velli, M. et al., 2021, accepted by JGR Space Physics, DOI:10.1029/2021JA029711
- [2] *Alfvénic versus non-Alfvénic turbulence in the inner heliosphere as observed by Parker Solar Probe*, Shi, C., Velli, M., Panasenco, O., et al., 2021, A&A, DOI:10.1051/0004-6361/202039818
- [3] *Oblique Tearing Mode Instability: Guide Field and Hall Effect*, Shi, C., Velli, M., Pucci, F., et al., 2020, ApJ, 902, 2, DOI: 10.3847/1538-4357/abb6fa
- [4] *Propagation of Alfvén waves in the expanding solar wind with the fast-slow stream interaction*, Shi, C., Velli, M., Tenerani, A., et al., 2020, ApJ, 888, 2, DOI: 10.3847/1538-4357/ab5fce
- [5] *Fast recursive reconnection and the Hall effect: Hall-MHD simulations*, Shi, C., Tenerani, A., Velli, M., et al., 2019, ApJ, 883, 2, DOI: 10.3847/1538-4357/ab33ff
- [6] *Marginal stability of Sweet–Parker type current sheets at low Lundquist numbers*, Shi, C., Velli, M., & Tenerani, A., 2018, ApJ, 859, 2, DOI: 10.3847/1538-4357/aabd83
  
- [7] *Evolution of Switchbacks in the Inner Heliosphere*, Tenerani, A., Sioulas, N., Matteini, L., et al., 2021, ApJL, 919, L31, DOI: 10.3847/2041-8213/ac2606
- [8] *Onset of fast magnetic reconnection and particle energization in laboratory and space plasmas*, Pucci, F., Velli, M., Shi, C., et al., 2020, Journal of Plasma Physics, 86(6), 535860601, DOI: 10.1017/S0022377820001373
- [9] *Tearing Instability and Periodic Density Perturbations in the Slow Solar Wind*, Réville, V., Velli, M., Rouillard, A., et al., 2020, ApJL, 895, 1, DOI: 10.3847/2041-8213/ab911d
- [10] *The role of Alfvén wave dynamics on the large scale properties of the solar wind: comparing a MHD simulation with PSP E1 data*, Réville, V., Velli, M., Panasenco, O., et al., 2020, ApJS, 246, 2, DOI: 10.3847/1538-4365/ab4fef
- [11] *Magnetic field kinks and folds in the solar wind*, Tenerani, A., Velli, M., Matteini, L., et al., 2020, ApJS, 246, 2, DOI: 10.3847/1538-4365/ab53e1
- [12] *Exploring Solar Wind Origins and Connecting Plasma Flows from the Parker Solar Probe to 1 au: Nonspherical Source Surface and Alfvénic Fluctuations*, Panasenco, O., Velli, M., D’Amicis, R., et al., 2020, ApJS, 246, 2, DOI: 10.3847/1538-4365/ab61f4
- [13] *The geometry of an electron scale magnetic cavity in the plasma sheet*, Liu, H., Zong, Q.-G., Zhang, H., et al., 2019, GRL, 46, 16, DOI: 10.1029/2019GL083569
- [14] *Turbulence and particle acceleration in collisionless magnetic reconnection: effects of temperature inhomogeneity across pre-reconnection current sheet*, Lu, S., Angelopoulos, V., Artemyev, A. V., et al., 2019, ApJ, 878, 2, DOI: 10.3847/1538-4357/ab1f6b