

Chuanfei Dong

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EDUCATION

- 2015** – Ph.D., Space Science, University of Michigan.
- 2015** – Ph.D., Scientific Computing, University of Michigan.
- 2014** – M.S.E., Nuclear Engineering (Plasma Physics), University of Michigan.
- 2012** – M.S., Space Science, University of Michigan.
- 2010** – M.S., Space and Planetary Sciences, Georgia Tech.
- 2009** – B.S., Space Physics, University of Science and Technology of China.

PROFESSIONAL EMPLOYMENT

- 2023.01** – Assistant Professor, Department of Astronomy, Boston University.
- 2021.04** – **2022.12** Staff Scientist, DOE's Princeton Plasma Physics Laboratory(.gov).
- 2018.01** – **2022.12** Associate Research Scholar, Department of Astrophysical Sciences, Princeton University.
- 2016.01** – **2017.12** NASA Jack Eddy Fellow, Princeton University.
- 2015.09** – **2015.12** Postdoctoral Scholar, Space Sciences Laboratory, University of California, Berkeley.

SELECTED HONORS, FELLOWSHIPS, AND AWARDS

- 2024**: Alfred P. Sloan Research Fellow in Physics, Alfred P. Sloan Foundation.
- 2023**: HPC Innovation Excellence Award, Hyperion Research.
- 2023**: DOE Early Career Research Award, US Department of Energy.
- 2019**: New Leaders in Space Science, National Academy of Science.
- 2018**: Young Researcher Awards, European Space Agency (ESA).
- 2016, 2018**: Group Achievement Award to MAVEN Science Team, NASA.
- 2018**: Winner of MBR Space Settlement Challenge, Dubai Future Foundation.
- 2016**: Robert H. Goddard (RHG) Exceptional Achievement for Science to the MAVEN Science Team, NASA.
- 2015**: NASA Jack Eddy Postdoctoral Fellowship.
- 2015**: MICDE Fellowship, Michigan Institute for Computational Discovery and Engineering.
- 2015**: Richard and Eleanor Towner Award for Distinguished Academic Achievement, University of Michigan.
- 2013** – **2015**: NASA Earth and Space Science Fellowship.
- 2014**: MIPSE Fellowship, Michigan Institute for Plasma Science and Engineering.
- 2013**: Vela Fellowship, Los Alamos National Laboratory.

PROFESSIONAL SERVICE AND AFFILIATIONS

- 2024** – present: Institutional PI of Mauve Telescope.
- 2024** – present: Member of the Natural Sciences Curriculum Committee (NSCC).
- 2024** – present: Executive Committee Member of NASA's Exoplanet Exploration Program Analysis Group (ExoPAG).

2023 – present: Associate Editor, *Frontiers in Astronomy and Space Sciences*.
2023 – **2024**: Program Committee of IEEE International Conference on Plasma Science.
2023 – present: Steering/Selection Committee of NASA Jack Eddy Postdoctoral Fellowship Program.
2023 – present: Graduate Admission Committee, Department of Astronomy, BU.
2022 – **2024**: Steering Committee Member of NASA's Venus Exploration Analysis Group (VEXAG).
2021 – **2022**: Program Committee Member of American Physical Society (APS) Division of Plasma Physics (DPP).
2020 – present: Executive Committee Member of NASA's LWS Program Analysis Group
2019 – present: Co-I of ESA-JAXA BepiColombo mission to Mercury.
2019 – present: Working Group Lead on Planetary Environments and Evolution of the TRAPPIST-1 JWST Community Initiative.
2019 – present: Member of Parker Solar Probe Venus Working Group.
2019, 2021: Invited by NASA to participate in the NASA Research Exhibit at SC19, SC21 to present NASA-funded planetary research to the Public.
2018: Selected to attend NASA's 30th Annual Planetary Science Summer Seminar (for a New Frontiers mission concept study to Uranus), JPL.
2018 – present: Steering Committee Member of NASA's Nexus for Exoplanet System Science (NExSS).
2018 – present: Member of ESA-JAXA BepiColombo Hermean Environment Working Group (HEWG).
2018: Faculty/Lecturer for the 2018 Heliophysics Summer School.
2016 – present: Panelist and External Reviewer for NASA, NSF, Austrian Science Fund, and United Arab Emirates Space Agency.
2014: Give student tutorials to ~100 students at the 2014 SHINE conference.
2011 – present: Member of Mars Atmosphere and Volatile Evolution (MAVEN) Mission
2010 – present: Member of AGU, APS, AAS, EGU, IAU.
2009 – present: Referee for *Nature Astronomy*, *Science Advances*, *The Astrophysical Journal*, *Geophysical Research Letters*, *Journal of Geophysical Research - Space Physics*, *Journal of Geophysical Research – Planets*, *Icarus*, *Planetary and Space Science*, *International Journal of Astrobiology*, *Acta Astronautica*, *Advances in Space Research*, *Journal of the Atmospheric Sciences*, *Physics of Plasmas*, *EPL (Europhysics Letters)*, *Applied Physics Letters*, *Journal of Applied Physics*, *Review of Scientific Instruments*, *AIP Advances*, *Physics Letters A*, *Physica A*, *Sensors*; *IEEE Access*, etc.

SELECTED INVITED COLLOQUIA, SEMINARS, AND CONFERENCE TALKS

2025: Department of Physics and Astronomy, Dartmouth College.
2025: Department of Earth, Atmospheric, and Planetary Sciences, MIT.
2024: NERS, University of Michigan.
2024: Harvard-Smithsonian Center for Astrophysics (CfA).
2023: Plasma Science and Fusion Center (PSFC), MIT.
2023: Lunar and Planetary Laboratory, University of Arizona.
2023: Department of Physics and Applied Physics, University of Massachusetts Lowell.
2022: Invited Talk, American Geophysical Union Fall Meeting.
2022: Invited Talk, Dubai Future Forum, funded by the Dubai Future Foundation.

2022: Invited Talk, COSPAR Scientific Assembly.
2022: Department of Astronomy, Boston University.
2021: UW Astrobiology Colloquium, University of Washington.
2020: Invited Talk, The EGU General Assembly.
2020: NERS, University of Michigan.
2020: Princeton Plasma Physics Laboratory (DOE).
2019: Department of Astronomy, Columbia University.
2019: Lockheed Martin Solar and Astrophysics Laboratory (LMSAL).
2019: Department of Astronomy, Cornell University.
2019: Department of Earth, Atmospheric, and Planetary Sciences, MIT.
2019: Harvard-Smithsonian Center for Astrophysics (CfA).
2019: Department of Astrophysical Sciences, Princeton University.
2019: Department of Space Science, University of Alabama in Huntsville.
2018: Invited Talk, The Triennial Earth-Sun Summit (TESS).
2018: Laboratory for Atmospheric and Space Physics, University of Colorado Boulder.
2017: Department of Physics and Astronomy, George Mason University.

TEACHING EXPERIENCE

Spring 2025 CAS AS 708: Plasma Physics

Physics of space and astrophysical plasmas. Individual particle drifts in fields, electrostatic and electromagnetic waves and instabilities, magnetohydrodynamics, kinetic theory of waves, instabilities, and Landau damping.

Fall 2024 CAS AS 101: The Solar System

Spring 2024 CAS AS 101: The Solar System

Spring 2023 CAS AS 101: The Solar System

The historical development of astronomy and the motion of the planets. The formation of the solar system. The sun and its effects on the earth. Description of the planets and the moons of our solar system, including recent results from the space program. Use of the observatory.

Fall 2023 CAS AS 311: Planetary Physics

Celestial mechanics, tides, resonances. Physical processes that affect atmospheres, surfaces, interiors of planets, and their satellites. Comets, asteroids, meteorites, and Kuiper belt objects. Formation and evolution of the solar system. Extra-solar planets.

Summer 2018

Invited to give lectures on "Living with Stars and Societal Relevance" at 2018 Heliophysics Summer School

Winter 2013

Guest Lecture on "Kinetic Plasma Waves" for AOSS 596: Gaskinetic Theory (by Prof. Tamas I Gombosi)

SELECTED REFEREED PUBLICATIONS (124 in total, 27 as lead author, and 378 conference presentations) [Google Scholar](#): Citations – 4965, h-index – 40

Ten Selected First Author Paper

1. C. Dong, L. Wang, Y.-M. Huang, L. Comisso, T. A. Sandstrom, A. Bhattacharjee, Reconnection-driven energy cascade in magnetohydrodynamic turbulence, *Science Advances* **8**, eabn7627 (2022).
2. C. Dong, M. Jin, M. Lingam, Atmospheric Escape From TOI-700 d: Venus versus Earth Analogs, *ApJ Letters* **896**, L24 (2020).
3. C. Dong, L. Wang, A. Hakim, A. Bhattacharjee, J. A. Slavin, G. A. DiBraccio, K. Germaschewski, Global Ten-Moment Multifluid Simulations of the Solar Wind Interaction with Mercury: From the Planetary Conducting Core to the Dynamic Magnetosphere, *Geophys. Res. Lett.* **46**, 11584-11596 (2019).
4. C. Dong, M. Jin, M. Lingam, V. Airapetian, Y. J. Ma, B. van der Holst, Atmospheric escape from the TRAPPIST-1 planets and implications for habitability, *Proc. Natl. Acad. Sci.* **115**, 260-265 (2018).
5. C. Dong, L. Wang, Y.-M. Huang, L. Comisso, A. Bhattacharjee, Role of the Plasmoid Instability in Magnetohydrodynamic Turbulence, *Phys. Rev. Lett.* **121**, 165101 (2018).
6. C. Dong, T. Z. Zhao, K. Behm, P. G. Cummings, J. Nees, A. Maksimchuk, V. Yanovsky, K. Krushelnick, A. G. R. Thomas, High Flux Femtosecond X-ray Emission from the Electron-Hose Instability in Laser Wakefield Accelerators, *Phys. Rev. Accel. Beams* **21**, 041303 (2018).
7. C. Dong, Y. Lee, Y. J. Ma, M. Lingam, S. W. Bougher, J. G. Luhmann, S. M. Curry, G. Toth, A. F. Nagy, V. Tenishev, X. H. Fang, D. Mitchell, D. Brain, B. Jakosky, Modeling Martian Atmospheric Losses over Time: Implications for Exoplanetary Climate Evolution and Habitability, *ApJ Letters* **859**, L14 (2018).
8. C. Dong, M. Lingam, Y. J. Ma, and O. Cohen, Is Proxima Centauri B habitable? A study of atmospheric loss, *ApJ Letters* **837**, L26 (2017).
9. C. Dong, Z. G. Huang, M. Lingam, G. Toth, T. I. Gombosi, A. Bhattacharjee, The dehydration of water worlds via atmospheric losses, *ApJ Letters* **847**, L4 (2017).
10. C. Dong, Minor ion heating in spectra of linearly and circularly polarized Alfvén waves: Thermal and non-thermal motions associated with perpendicular heating, *Phys. Plasmas* **21**, 022302 (2014).

Ten Selected Student's (with *) or Postdoc/Researcher's (with **) Paper

11. C. Zhang**, C. Dong, H. Zhou**, J. Halekas, M. Yamauchi, H. Nilsson, T. Z. Liu, M. Persson, S. Curry, Y. Dong, Y. Futaana, Y. Chen, M. Zhou, R. Suranga, G. Hanley, C. Mazelle, S. Xu, R. Ramstad, M. Holmström, L.-J. Chen, Anomalous Transient Enhancement of Planetary Ion Escape at Mars, *Nature Communications*, in press (2025).
12. Z. Huang**, C. Dong, L. Wang**, Machine learning heat flux closure for multi-moment fluid modeling of nonlinear Landau damping, *Proc. Natl. Acad. Sci.*, in press (2025).

13. L. Chin*, C. Dong, M. Lingam, Role of Planetary Radius on Atmospheric Escape of Rocky Exoplanets, *ApJ Letters* **963**, L20 (2024).
14. P. T. Campbell*, B. K. Russell*, C. Dong, G. Fiksel, P. M. Nilson, A. G. R. Thomas, C. A. Walsh, K. M. Krushelnick, and L. Willingale, Formation of collisionless shocks driven by strongly magnetized relativistic electrons in the laboratory, *Phys. Rev. Research* **6**, L012016 (2024).
15. Y. Qin*, J. Ma*, M. Jiang*, C. Dong, H. Fu, L. Wang, W. Cheng, and Y. Jin, Data-driven modeling of Landau damping by physics-informed neural networks, *Phys. Rev. Research* **5**, 033079 (2023).
16. W. J. Cheng*, H. Y. Fu, L. Wang**, C. Dong, Y. Q. Jin*, M. L. Jiang, J. Y. Ma, Y. L. Qin, and K. X. Liu, Data-driven, multi-moment fluid modeling of Landau damping, *Computer Physics Communications* **282**, 108538 (2023).
17. S. Yang*, L. Wang**, C. Dong, Discovery of double hall pattern associated with collisionless magnetic reconnection in dusty plasmas, *Mon. Not. R. Astron. Soc* **523**, 928–933 (2023).
18. D. Li*, Y. Chen**, C. Dong, L. Wang**, G. Toth, Numerical study of magnetic island coalescence using magnetohydrodynamics with adaptively embedded particle-in-cell model, *AIP Advances* **13**, 015126 (2023).
19. R. Jolitz*, C. Dong, A. Rahmati, D. A. Brain C. Lee, R. Lillis, S. M. Curry, B. M. Jakosky, Test particle model predictions of SEP electron transport and precipitation at Mars, *J. Geophys. Res. Space Physics* **126**, e2021JA029132 (2021).
20. A. E. Raymond*, C. Dong, A. McKelvey, C. Zulick, N. Alexander, A. Bhattacharjee, P. T. Campbell, H. Chen, V. Chvykov, E. Del Rio, P. Fitzsimmons, W. Fox, B. Hou, A. Maksimchuk, C. Mileham, J. Nees, P. M. Nilson, C. Stoeckl, A. G. R. Thomas, M. S. Wei, V. Yanovsky, K. Krushelnick, and L. Willingale, Relativistic electron driven magnetic reconnection in the laboratory, *Phys. Rev. E* **98**, 043207 (2018).