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CURRICULUM VITAE

of
Marshall John Styczinski

PERSONAL

Information: US Citizen, born 1988 in Dublin, California.
Position: NASA Postdoctoral Fellow at the Jet Propulsion Laboratory, California Institute of Technology.
Interests: Magnetic sounding; astrobiology; space exploration; science communication and public outreach
Website: <https://moosh.run>

EDUCATION

09/2012 – 08/2021 University of Washington
Degree conferred: Doctor of Philosophy, Physics
Significant works: “Analytical forward models for magnetic induction of asymmetric, icy ocean worlds with implications for spacecraft investigations” ([Doctoral dissertation](#), July 2021)
Degree conferred: Graduate Certificate, Astrobiology
Degree conferred: Master of Science, Physics

09/2006 – 06/2010 University of California, Davis
Degree conferred: Bachelor of Science with Highest Honors, Physics
Significant works: “On the Return of HP West: The Revival and Restoration of a Hewlett-Packard 5950A Photoelectron Spectrometer” ([Undergraduate honors thesis](#), May 2010)

HONORS AND AWARDS

09/2021 – present [NASA Postdoctoral Program](#) recipient
01/2022 Expert consultant, [UW Astrobiology Program](#) “life detection mission” workshop
09/2018 – 08/2021 [NASA Earth and Space Science Fellowship](#) recipient
05/2020 – 08/2020 [JPL Planetary Science Summer School](#) participant
04/2019 – 09/2019 Visiting Scholar, University of Oregon Planetary Science Group
08/2018 – 09/2018 Visiting Scholar, University of Melbourne Astrophysics Group
06/2018 – 08/2018 [JPL Space Grant Summer Internship](#) participant
03/2017 – 08/2021 Science Communication Fellow, [Pacific Science Center](#)
06/2010 Bachelor of Science with Highest Honors from UC Davis

SCIENTIFIC PUBLICATIONS

1. **M. J. Styczinski**, S. D. Vance, and M. Melwani Daswani. *PlanetProfile*: self-consistent interior structure modeling for terrestrial bodies in python. *submitted to Earth and Space Science*, 2022. DOI: [10.1002/es-soar.10512890.1](https://doi.org/10.1002/es-soar.10512890.1)
2. J. Becker, D. Z. Seligman, F. C. Adams, and **M. J. Styczinski**. The influence of tidal heating on the habitability of planets orbiting white dwarfs. *The Astrophysical Journal Letters*, 945(L24), 2023. DOI: [10.3847/2041-8213/acbe44](https://doi.org/10.3847/2041-8213/acbe44)
3. A. Arredondo, A. Hodges, J. N. H. Abrahams, C. C. Bedford, B. D. Boatwright, J. Buz, C. Cantrall, J. Clark, A. Erwin, S. Krishnamoorthy, L. Magaña, R. M. McCabe, E. C. McIntosh, J. L. Noviello, M. Pellegrino, C. Ray, **M. J. Styczinski**, and P. Weigel. VALENTInE: A concept for a new frontiers-class long-duration in situ balloon-

based aerobot mission to venus. *PSJ*, 3(7):152, 2022. DOI: [10.3847/psj/ac7324](https://doi.org/10.3847/psj/ac7324)

4. **M. J. Styczinski**, S. D. Vance, E. M. Harnett, and C. J. Cochrane. A perturbation method for evaluating the magnetic field induced from an arbitrary, asymmetric ocean world analytically. *Icarus*, 376:114840, 2022. DOI: [10.1016/j.icarus.2021.114840](https://doi.org/10.1016/j.icarus.2021.114840)
5. **M. J. Styczinski**, Z. S. Cooper, D. M. Glaser, O. Lehmer, V. Mierzejewski, and J. Tarnas. Chapter 7: Assessing habitability beyond earth. In M. J. Schaible, N. Szeinbaum, and G. Tan, editors, *Astrobiology Primer 3.0 special issue*. In press, *Astrobiology*, 2023.
6. **M. J. Styczinski**, D. M. Glaser, M. Hooks, T. Z. Jia, K. Johnson-Finn, G. A. Schaible, and M. J. Schaible. Chapter 11: Astrobiology education, engagement, and resources. In M. J. Schaible, N. Szeinbaum, and G. Tan, editors, *Astrobiology Primer 3.0 special issue*. In press, *Astrobiology*, 2023.
7. C. J. Cochrane, S. D. Vance, T. A. Nordheim, **M. J. Styczinski**, A. Masters, and L. H. Regoli. In search of subsurface oceans within the uranian moons. *JGR: Planets*, 126(12):e2021JE006956, 2021. DOI: [10.1029/2021JE006956](https://doi.org/10.1029/2021JE006956)
8. S. D. Vance, **M. J. Styczinski**, B. G. Bills, C. J. Cochrane, K. M. Soderlund, N. Gómez-Pérez, and C. S. Paty. Magnetic induction responses of Jupiter’s ocean moons including effects from adiabatic convection. *JGR: Planets*, 126(2):e2020JE006418, 2021. DOI: [10.1029/2020JE006418](https://doi.org/10.1029/2020JE006418)
9. **M. J. Styczinski** and E. M. Harnett. Induced magnetic moments from a nearly spherical ocean. *Icarus*, 354:114020, 2021. DOI: [10.1016/j.icarus.2020.114020](https://doi.org/10.1016/j.icarus.2020.114020)
10. G. T. Seidler, D. R. Mortensen, A. J. Remesnik, J. I. Pacold, N. A. Ball, N. Barry, **M. Styczinski**, and O. R. Hoidn. A laboratory-based hard x-ray monochromator for high-resolution x-ray emission spectroscopy and x-ray absorption near edge structure measurements. *Rev. Sci. Instr.*, 85(11):113906, 2014. DOI: [10.1063/1.4901599](https://doi.org/10.1063/1.4901599)

PROFESSIONAL AFFILIATIONS

Affiliate, Europa Clipper Science Team
[University of Washington Astrobiology Program](#)

PROFESSIONAL QUALIFICATIONS

Extensive experience with a wide variety of programming languages and systems, especially:
[SPICE ephemeris software](#), [NASA PDS](#), UNIX & bash, Python, Matlab, Fortran, C++, IDL, and \LaTeX
Open-source science, software, data, and project management with GitHub, Zenodo, PyPI packaging, and more
6 years formal experience teaching university physics, including TA training and exam writing

SELECTED PRESENTATIONS

03/2023 JPL Science Visitor Colloquium Program seminar – Open-source science, software, and data
06/2022 JPL Science Visitor Colloquium Program seminar – Magnetic sounding
05/2022 JPL Icy Worlds Collaboration and Exchange seminar – Magnetic sounding
04/2022 NASA Ames Exobiology Group colloquium – Magnetic sounding
07/2021 [University of Washington PhD defense presentation](#)
08/2018 [University of Melbourne Astrophysics Colloquium](#)
12/2017 [Pacific Science Center’s “Science in the City”](#)
05/2016 Town Hall Theater’s “[UW Science Now](#)” speaker series ([link to recording](#))

RESEARCH POSITIONS

09/2021 – present *NASA Postdoctoral Fellow*, JPL-Caltech
Research focus: Magnetic sounding of icy ocean worlds
Magnetic induction modeling and data analysis
Geophysical modeling of planetary interior structure

Advisor: NASA Research Scientist Steven D. Vance

05/2018 – 08/2021 *Doctoral Candidate*, University of Washington

Research focus: Magnetic sounding of icy moons, especially Europa
Magnetospheric plasma modeling

Advisor: Affiliate Professor Erika Harnett

09/2012 – 05/2018 *Graduate Student*, University of Washington

Past research: Improving the efficiency of conceptual instruction in- and out-of-class
Student understanding of Gauss's law
Interdisciplinary learning in science courses

Advisor: Professors Paula R. L. Heron and Peter S. Shaffer

04/2011 – 07/2012 *Junior Specialist*, University of California, Davis

Duties: Design, build, test, and analyze cryogenic bubble detection experiment (Tripathi);
Develop and implement software for analyzing irradiated magnets,
assess radiation damage of magnets used in Linear Collider R&D (Pellett);

Supervisor(s): Professor S. Mani Tripathi, Professor Emeritus David Pellett

07/2010 – 04/2011 *Development Technician*, University of California, Davis

Duties: Restore, repair, and improve indium evaporative deposition system (Tripathi);
Construct sensitive Double Chooz neutrino detector in international team (Svoboda);
Train and mentor undergraduate laboratory assistants
with X-ray photoemission spectrometer (Fadley)

Supervisor(s): Professor S. Mani Tripathi, Professor Robert Svoboda, Distinguished Professor
Charles S. Fadley

05/2008 – 06/2010 *Undergraduate Research Assistant*, University of California, Davis

Duties: Restore and optimize X-ray photoemission spectrometer system, analyze Si/Mo
multilayer crystal native oxide properties

Supervisor(s): Distinguished Professor Charles S. Fadley

TEACHING EXPERIENCE

09/2012 – 06/2018 *Graduate Teaching Assistant*, University of Washington

Courses: Introductory physics tutorials and laboratories, advanced electromagnetism tutorials,
and introductory courses in astrobiology, planetary science, and space science

Structure: Sole or co-instructor leading discussions in 24–32 student classrooms

Note: Most terms as head TA, leading training sessions for other TAs, writing exams,
and course administration (including curriculum writing and revisions)

09/2012 – 06/2018 *Physics Study Center Staff*, University of Washington

Courses: Introductory and advanced physics

Structure: Individual homework and conceptual guidance

10/2007 – 06/2012 *Physics Club Volunteer Tutor*, University of California, Davis

Courses: Introductory physics and calculus

Structure: Individual homework and conceptual guidance