

Rachael J. Filwett, Ph.D.

✉ rachael.filwett@montana.edu

🌐 rachael-filwett.owlstown.net

Employment History

2023 – ◇ **Assistant Professor**, Department of Physics, Montana State University.

2018 – 2022 ◇ **Postdoctoral Research Scholar**. University of Iowa.

Education

2018 ◇ **Ph.D., University of Texas San Antonio** Physics.

Thesis title: *Measuring the Sources and acceleration Mechanisms of Suprathermal Heavy Ions in Stream Interaction Regions near 1 AU*.

2016 ◇ **M.S., University of Texas San Antonio** Physics.

2013 ◇ **B.S. Physics, East Asian Studies, Valparaiso University**

Minor: Mathematics

Research Publications

Journal Articles

- 1 R. J. Filwett, R. C. Allen, G. Li, and M. Dayeh, “Pick-up he+ in coronal mass ejections as a tracer of suprathermal ion sources,” *Triennial Earth-Sun Summit 2024*, 2024.
- 2 R. C. Allen, S. E. Gibson, I. Hewins, *et al.*, “A mosaic of the inner heliosphere: Three carrington rotations during the whole heliosphere and planetary interactions interval,” *Journal of Geophysical Research: Space Physics*, vol. 128, no. 6, e2023JA031361, 2023.
- 3 I. J. Cohen, C. Arridge, A. Azari, *et al.*, “The case for studying other planetary magnetospheres and atmospheres in heliophysics,” *arXiv preprint arXiv:2308.11690*, 2023.
- 4 C. O. Lee, B. Sánchez-Cano, G. A. DiBraccio, *et al.*, “Heliophysics and space weather science at 1.5 au: Knowledge gaps and need for space weather monitors at mars,” *Frontiers in Astronomy and Space Sciences*, vol. 10, p. 1064208, 2023.
- 5 E. Lichko, D. Endrizzi, J. Juno, *et al.*, “Enabling discoveries in heliospheric science through laboratory plasma experiments,” *Bulletin of the American Astronomical Society*, vol. 55, no. 3, p. 236, 2023.
- 6 N. Lugaz, C. O. Lee, L. K. Jian, *et al.*, “Multi-spacecraft heliospheric mission (mhm),” *Bulletin of the American Astronomical Society*, vol. 55, no. 3, p. 249, 2023.
- 7 R. Nikoukar, L. Regoli, A. J. Halford, M. D. Zettergren, K. Dialynas, and **R. Filwett**, “Raising awareness on mental health in the heliophysics community,” *Frontiers in Physics*, vol. 11, p. 1237166, 2023.
- 8 N. Wijsen, G. Li, Z. Ding, *et al.*, “On the seed population of solar energetic particles in the inner heliosphere,” *Journal of Geophysical Research: Space Physics*, vol. 128, no. 3, e2022JA031203, 2023.
- 9 R. Allen, G. Ho, G. Mason, *et al.*, “Radial evolution of a cir: Observations from a nearly radially aligned event between parker solar probe and stereo-a,” *Geophysical Research Letters*, vol. 48, no. 3, e2020GL091376, 2021.
- 10 D. N. Baker, S. G. Kanekal, V. Hoxie, *et al.*, “The relativistic electron-proton telescope (rept) investigation: Design, operational properties, and science highlights,” *Space science reviews*, vol. 217, no. 5, p. 68, 2021.

- 11 R. J. Filwett, A. N. Jaynes, D. N. Baker, S. G. Kanekal, B. Kress, and J. B. Blake, "Solar energetic proton access to the near-equatorial inner magnetosphere," *Journal of Geophysical Research: Space Physics*, vol. 125, no. 6, e2019JA027584, 2020.
- 12 R. Filwett, M. Desai, R. Ebert, and M. Dayeh, "Spectral properties and abundances of suprathermal heavy ions in compression regions near 1 au," *The Astrophysical Journal*, vol. 876, no. 1, p. 88, 2019.
- 13 R. Filwett, M. Desai, M. Dayeh, and T. Broiles, "Source population and acceleration location of suprathermal heavy ions in corotating interaction regions," *The Astrophysical Journal*, vol. 838, no. 1, p. 23, 2017.
- 14 A. Luspay-Kuti, K. Mandt, K.-L. Jessup, *et al.*, "Photochemistry on pluto-i. hydrocarbons and aerosols," *Monthly Notices of the Royal Astronomical Society*, vol. 472, no. 1, pp. 104–117, 2017.
- 15 K. Mandt, A. Luspay-Kuti, M. Hamel, *et al.*, "Photochemistry on pluto: Part ii hcn and nitrogen isotope fractionation," *Monthly Notices of the Royal Astronomical Society*, vol. 472, no. 1, pp. 118–128, 2017.

Conference Proceedings

- 1 R. J. Filwett, D. Pacheco, G. C. Ho, S. Hart, and F. Carcaboso, "Acceleration and transport of suprathermal and energetic particles in the inner heliosphere: Observations and modeling ii oral," in *AGU23, AGU*, 2023.
- 2 A. Lee, R. J. Filwett, R. C. Allen, M. A. Dayeh, and G. Li, "Analysis of the longitudinal spread of impulsive sep events using time-intensity profiles and energetic ion spectra," in *AGU Fall Meeting Abstracts*, vol. 2023, 2023, SH51C–2618.
- 3 Y. Wu, G. Li, R. J. Filwett, M. Dayeh, and R. C. Allen, "Understanding observations of seed population of sep events using simulations of helium pickup ions," in *AGU Fall Meeting Abstracts*, vol. 2023, 2023, SH44A–05.
- 4 **R. Filwett**, A. Jaynes, and B. Kress, "Statistical study of solar energetic proton access during the van allen probes era," in *AGU fall meeting abstracts*, vol. 2021, 2021, SM15B–1974.
- 5 K. Mandt, A. Luspay-Kuti, K. L. Jessup, V. Hue, J. Kammer, and **R. Filwett**, "Nitrogen fractionation in the atmospheres of pluto and titan-implications for the origin of nitrogen in kbos and comets," in *EGU General Assembly Conference Abstracts*, 2017, p. 5584.

Service and Committees

- 2024- ♦ Curriculum and Programs
- 2023- ♦ Physics Graduate Admissions.
- 2024- ♦ Inclusivity and Environment Committee
Chair
- 2021-2022 ♦ Diversity, Equity, and Inclusion Committee
University of Iowa

Fellowships and Grants

- ♦ **Postdoctoral Research Fellowship** NSF.
- ♦ **LWS-FST** NASA.
- ♦ **H-FOS** NASA
- ♦ **FDSS Montana State University** NSF.
- ♦ **CAREER:** NSF.

Miscellaneous Experience

Awards and Achievements

2021 ♦ **Postdoctoral Research Scholar Excellence Award**, University of Iowa.

Teaching

Physics 240 ♦ Fall 2023, 2024.

Physics 242 ♦ Spring 2023, 2024.

Physics 1512 ♦ Summer 2021,2022, Fall 2021
University of Iowa

Public Outreach

2023, 2024 ♦ **Conference of Undergraduate Women in Physics (CUWiP)** .
University of Iowa and Montana State University

2021 ♦ **Astronomy Club talks** Des Moines and Ames amateur astronomy clubs, Astronomy on Tap
- San Antonio, Cedar Rapids Amateur Astronomers.

Students and Mentoring

REU students ♦ Amelia Lee Summer 2023

Undergraduate Students ♦ Abby High (2023), North Sanderson (2024), Deven Chedawalda(2023-2024)

Graduate Students ♦ Arch Robinson, Dillon Anderson (2024-present)

Postdoctoral Research Scholar ♦ Sarah Henderson (2023-present)