BENJAMIN L. ALTERMAN



Research Astrophysicist

blaltermanphd@gmail.com +1 (617) 506-9564 0000-0001-6673-3432
8800 Greenbelt Rd, Greenbelt, MD, 20771 @BLAlterman blalterman.github.io

BIO SKETCH

Dr. Alterman studies the Sun and solar wind on time scales ranging from seconds to decades to disentangle the effects of the solar cycle, inter-particle Coulomb collisions, and kinetic processes. He also studies suprathermal particles over the solar cycle to characterize their sources and acceleration mechanisms as well as during transient events to further constrain the latter. He works with instruments from multiple spacecraft including Wind, ACE, and Solar Orbiter. His publications show that the abundance of helium in the solar wind has a delayed response to changes in solar activity, the helium abundance can predict solar cycle onset, that helium and a secondary population of solar wind hydrogen have distinct speeds along the magnetic field when compared with the speed of Alfvén waves, and that the sources of suprathermal ions vary with solar activity while the means by which these ions achieve their observed energies does not.

Dr. Alterman's instrumentation experience covers data reduction, in-flight calibration, design, development, simulation, laboratory testing, and operations. The instruments he has experience with are the *Wind* spacecraft and *Parker Solar Probe* (PSP) Faraday cups (FCs); *Advanced Composition Explorer*'s (ACE) Ultra Low Energy Isotope Spectrometer (ULEIS); *Interstellar Mapping and Acceleration Probe* (IMAP) Compact Dual Ion Composition Experiment (CoDICE); and *Solar Orbiter* (SolO) Heavy Ion Sensor (HIS). These instruments cover solar wind kinetics and bulk plasma properties; solar wind, suprathermal, and energetic particle ion spectrometers; and dual-component instruments that combine two distinct instruments into a single housing.

KEY PUBLICATIONS

1. **Alterman, B. L.**, (1st of 4), et al., "A comparison of alpha particle and proton beam differential flows in collisionally young solar wind," *The Astrophysical Journal*, Sep. 2018. DOI: 10.3847/1538-4357/aad23f **105 Citations**
2. S. Livi, **Alterman, B. L.** (9th of 33), et al., "First results from the solar orbiter heavy ion sensor," *Astronomy and Astrophysics*, Aug. 2023. DOI: 10.1051/0004-6361/202346304 **34 Citations**
3. **Alterman, B. L.** and R. D'Amicis, "Cross helicity and the helium abundance as an in situ metric of solar wind acceleration," *The Astrophysical Journal Letters*, Apr. 2025. DOI: 10.3847/2041-8213/adb48e **19 Citations**
4. C. M. S. Cohen, **Alterman, B. L.** (2nd of 31), et al., "Imap's role in understanding particle injection and energization throughout the heliosphere," *Space Science Reviews*, Jan. 2026. DOI: 10.1007/s11214-025-01257-4 **9 Citations**
5. **Alterman, B. L.**, "Characterizing the impact of alfvén wave forcing in interplanetary space on the distribution of near-earth solar wind speeds," *The Astrophysical Journal Letters*, May 2025. DOI: 10.3847/2041-8213/add0a6 **8 Citations**

EDUCATION

PhD, Applied Physics

The Significance of Proton Beams in the Multi-scale Solar Wind

2012 – 2019 University of Michigan

- Advisors: Justin C. Kasper & Stefano Livi
- hdl.handle.net/2027.42/153427

BA, Physics & Philosophy

2008 – 2012 Macalester College

POSITIONS HELD

Research Astrophysicist

NASA Goddard Space Flight Center (GSFC)

Greenbelt, MD

2024 – Research Astrophysicist

Senior Research Scientist

Southwest Research Institute (SwRI)

San Antonio, TX

2023 – 2024 Senior Research Scientist
2021 – 2023 Research Scientist
2020 – 2021 Postdoctoral Researcher

Research Fellow

University of Michigan (UMich)

2019–2020 Ann Arbor, MI

PUBLICATION SUMMARY

- 19 H-index
- 45 Refereed Publications
- 1203 Citations
- 145 Presentations
  - 115 Conference (4 Invited)
  - 26 Invited Other
- 15 Other Publications
- 1 Dataset

Most indexed by 0000-0001-6673-3432 and SciExplorer.

SERVICE SUMMARY

- Multiple AGU/SPA Committees
- Organizer of AGU and SHINE sessions
- Journal Referee: Astrophysical Journal, JGR: Space Weather, A&A, Astrophysical Bulletin, Solar Physics, Astrophysical Journal
- Multiple NASA/ROSES Panels
- Organize mission team and department science seminars

AFFILIATIONS

INSTRUMENTATION

Dr. Alterman's instrumentation experience covers data reduction, data analysis, in-flight calibration, design, development, simulation, laboratory testing, and operations.

- Faraday cups (FCs): data reduction and analysis from the *Wind* spacecraft and *Parker Solar Probe* (PSP) FCs
- Ion composition spectrometers: in-flight calibration, operation, data reduction and analysis for *Solar Orbiter* (SolO) Heavy Ion Sensor (HIS)
- Energetic particle telescopes: data reduction and analysis from *Advanced Composition Explorer*'s (ACE) Ultra Low Energy Isotope Spectrometer (ULEIS)
- Dual-component instruments that combine two distinct instruments into a single housing
  - Testing of the *Interstellar Mapping and Acceleration Probe* (IMAP) Compact Dual Ion Composition Experiment (CoDICE) composition and suprathermal ion spectrometer
  - Design and simulation for the *Advanced Mass and Ionic Charge Composition Experiment* (AMICCE) suprathermal and energetic particle instrument

- American Geophysical Union
- American Physical Society
- European Geophysical Union
- The Explorers Club (Fellow)
- International Astronomical Union
- The Planetary Society

TECHNICAL SKILLS

Python | Bash | Git/GitHub | LaTeX | Mathematica | LabView | Linux | Mac OS | Windows | Simple Test Fixture Fabrication | Vacuum Chambers | High Voltage Equipment | Particle Accelerators | Core Lab Equipment | SIMION (basic functionality)

RESEARCH (SELECTED)

The Sun as a Star: Characterizing How the Sun Drives the Heliosphere Over Multiple Solar Cycles

2014 – | UMich, SwRI, NASA/GSFC

- Statistically identifying the source of the Alfvénic slow wind as solar wind from source regions that are continuously open to the heliosphere has a minimum speed that is less than the maximum speed of solar wind from source regions that are continuously open to the heliosphere
- Alfvén wave acceleration of the solar wind during transit through interplanetary space accounts for the distribution of fast wind speeds observed near Earth
- Solar wind from source regions that are continuously open to the heliosphere (e.g. coronal holes) that does not carry a significant amount of Alfvén waves is accelerated to speeds faster than slow wind but not to speeds characteristic of the fast wind
- The heavy element composition of the solar wind evolves with solar activity in a manner that suggests heavy element abundances are driven by gravitational settling
- The dependence of solar wind heavy element and helium abundances on solar wind speed in slow wind indicate the abundances are likely set by gravitational settling
- Demonstration that the solar wind helium abundance predicts solar cycle onset
- Development of the *Trans-Heliospheric Survey* data set
- Report a speed-dependent phase lag in solar wind helium's response to changes in sunspot number.

Connecting Solar Wind Kinetic Signatures, Solar Energetic Particle Events, and Instrumentation

2020 – | SwRI, NASA/GSFC

- Inter-calibration of Solar Orbiter's Heavy Ion Sensor and Suprathermal Ion Spectrograph
- Characterization of charge-state dependent iron heating at collisionless heliospheric shocks using Solar Orbiter's Heavy Ion Sensor
- Solar cycle variation of suprathermal abundances and spectra during quiet times using ACE/ULEIS
- Analysis of heavy ion surfing on Alfvén waves
- Inter-calibration of Solar Orbiter's Heavy Ion Sensor and Suprathermal Ion Spectrograph
- Characterization of charge particle spectra from solar wind through suprathermal energies
- Characterization of solar wind kinetic instabilities at 1 AU
- In-flight calibration and operations for Solar Orbiter's Heavy Ion Sensor
- Development, building, and testing of the *Interstellar Mapping and Acceleration Probe* (IMAP) Compact Dual Ion Composition Experiment (CoDICE) composition and suprathermal ion spectrometer

Multi-scale Analysis of Solar Wind Ions

Mentors: Dr. Justin C. Kasper & Dr. Stefano Livi

2014 – 2020 | UMich

- Demonstrate a statistically significant difference between Coulomb collisional coupling to alpha particles and proton beams
- Predict asymptotic alpha particle and proton beam differential flow in the absence of Coulomb collisions.
- Analyze *Wind*/FC data with Nyquist's instability criterion to differentiate between instabilities and collisions.
- Validate a *Wind*/FC proton beam dataset covering 23+ years.
- Characterize novel measurements of interpenetrating solar wind streams containing multiple populations in two distinct ion species and demonstrate that this solar wind configuration is the result of two colliding coronal mass ejections.
- Develop *SolarWindPy*, an open source python package for solar wind data analysis.

Laboratory Characterization of Mass Spectrometer

Mentors: Dr. Stefano Livi & Dr. Jim Raines

1/2018 – 2/2018 | UMich, SwRI

- University of Michigan & Southwest Research Institute
- Collect *MESSENGER*/FIPS recalibration data.
- Operate high voltage particle accelerator.
- Calibrate time-of-flight experiment.

Characterize Phenomenological Signatures of an Extended Standard Model of High Energy Physics

Mentor: Dr. Tonnis ter Veldhuis

6/2011 – 8/2011 | Macalester College

- Predict phenomenological signatures of the Singlet Scalar Standard Model extension using *Mad Graph* simulations.

TEACHING

Guest Lecturer

Engineering for the Space Environment

9/2018 | University of Michigan

- Masters of Engineering class

Alterman Tutoring

2011 – 2019 | Multiple Locations

- Tutor and mentor high school and college students in physics and math with a focus on individualized learning strategies, self-teaching, and self-advocacy.

Introductory Physics Labs, Summer Session

Instructor

Multiple Dates | University of Michigan

- (5/2014–6/2014) Introductory Physics Lab for Life Sciences
- (5/2013–6/2013) Introductory Physics Lab for Engineers

Electromagnetic Theory and Intro Physics

Teaching Assistant and Grader

8/2011 – 4/2012 | Macalester College

- Grade and tutor undergraduate introductory physics and upper level electromagnetism.

HONORS, AWARDS, & FELLOWSHIPS

Parker Solar Probe Group Achievement Award

National Aeronautics and Space Administration (NASA)

2023

Outstanding Student Presentation Award

AGU Fall Meeting & SHINE Conference

2018, 2019 | Multiple Locations

- (2019) SHINE Conference, Boulder, C.O.
- (2018) AGU Fall Meeting, Washington, D.C.

Leadership Fellow

Ross School of Business

9/2018 – 4/2019 | University of Michigan

Leadership Crisis Challenge Finalist

Ross School of Business

1/2018 | University of Michigan

Munger Case Competition

Munger Graduate Residences

2018 | University of Michigan

Science Communication Fellow

Museum of Natural History

2017 | University of Michigan

Bezos Scholar

Bezos Family Foundation

2007 | Aspen Institute

SERVICE

Policy Advocacy

Congressional Visit Day

American Geophysical Union

12/2018 | Washington, D.C.

- Hold 5 meetings with the Massachusetts Congressional delegation.
- Brief Congressional staffers on the importance of funding Space Science, Geophysics research, and graduate education.
- Communicate the significance of stable budgets for research, graduate student recruitment, and graduate student retention.
- Share the excitement surrounding Parker Solar Probe and the *Solar Wind Electrons, Alphas, and Protons* (*SWEAP*) instrument suite.

Michigan Congressional Delegation & Senate Commerce Committee

University of Michigan

7/2018 | Washington, D.C.

- Hold 9 meetings with the Michigan Congressional delegation.
- Meet with Senate Commerce Committee.
- Organized with Coalition for Aerospace and Science & Aerospace Industries Association annual Showcase of NASA Partnerships & Collaboration.

Local Science Partners

American Geophysical Union

2021- | Washington, D.C.

Conference Session Organizer
- **AGU Fall Meeting** (2021, 2021, 2020, 2019)
- **SHINE Conference** (2019 #22, 2017 #1)

Committees
- AGU/SPA Nomination Task Force (2020-2023)
- AGU/SPA DEI Committee (2023-2025)
- AGU/SPA Early Career Leadership Advisory Committee (2023-)

Journal Referee
- Astrophysical Journal
- Astrophysical Journal Letters
- JGR: Space Weather
- Astronomy & Astrophysics
- Astrophysical Bulletin
- Solar Physics

Proposal Review Panels
- NASA/ROSES (2020, 2021)

Institutional

Organizer of Heliosphere Group Meeting
2020 – 2022 | Southwest Research Institute
- Run weekly science meeting.
- Coordinate weekly science presentations.
- Integrate graduate students through senior researchers into a cohesive team.
- Organize group response to NASA funding solicitations.

Co-Organizer of Space Science Seminar Series
2020 –2024 | Southwest Research Institute

Graduate Student Representative
Central Student Government

2012 – 2015 | University of Michigan
- (4/2013–4/2014) Vice-Chair, Rules Committee
- (8/2014–1/2015) Vice-Chair, Inclusive Campus Commission

Diversity, Equity, and Inclusion (DEI)

Committee for an Inclusive University
Faculty Senate Advisory Committee on University Affairs (SACUA)

2018 – 2019 | University of Michigan
- Collect and summarize unit DEI expectations.
- Explore and summarize how these expectations relate to faculty evaluation and reviews.
- Recommend best practices to SACUA.

DEI Student Committee Chair
Climate & Space Sciences & Engineering Department

2018 – 2019 | University of Michigan
- Coordinate student events targeting DEI.
- Advise faculty committees on DEI activities, especially as related to student involvement and experience within the department.

Student Advisory Board
Services for Students with Disabilities

2017 – 2018 | University of Michigan
- Provide guidance and feedback to the Office of Services for Students with Disabilities.
- Interview candidates for University of Michigan Associate Vice-President for Student Life and Executive Director of University Health Services.

PUBLICATIONS

Indexed by 0000-0001-6673-3432 and SciExplorer.

Peer Reviewed Articles

1. R. C. Allen, **Alterman, B. L.** (6th of 12), et al., "State of the early career profession in space physics and aeronomy: Climatological survey results," *Journal of Geophysical Research (Space Physics)*, Apr. 2026. DOI: 10.1029/2026JA035166
2. **Alterman, B. L.** and R. D'Amicis, "On the regulation of the solar wind helium abundance by the hydrogen compressibility," *The Astrophysical Journal Letters*, Jan. 2026. DOI: 10.3847/2041-8213/ae002f **5 Citations**.
3. J. T. Coburn, **Alterman, B. L.** (10th of 24), et al., "On the coronal origin of magnetic switchbacks in the solar wind," *Nature Astronomy*, Oct. 2026. DOI: 10.1038/s41550-026-02928-0
4. C. M. S. Cohen, **Alterman, B. L.** (2nd of 31), et al., "Imap's role in understanding particle injection and energization throughout the heliosphere," *Space Science Reviews*, Jan. 2026. DOI: 10.1007/s11214-025-01257-4 **9 Citations**.
5. R. D'Amicis, **Alterman, B. L.** (12th of 35), et al., "Alfvénic solar wind intervals observed by solar orbiter: Exploiting the capability of the swa plasma suite and source region investigation," *Astronomy and Astrophysics*, Oct. 2026. DOI: 10.1051/0004-6361/202558566 **1 Citations**.
6. M. Karki, **Alterman, B. L.** (3rd of 4), et al., "Radial evolution of turbulent modes near the sun using parker solar probe and solar orbiter measurements," *The Astrophysical Journal*, Oct. 2026. DOI: 10.3847/1538-4357/aea6dd

7. M. M. Martinović, **Alterman, B. L.** (9th of 9), et al., "How the oblique drift instability alters solar wind heating and constrains the distribution of solar wind observations," *Physical Review Letters*, Jun. 2026. DOI: 10.1103/nlq9-2g37 **8 Citations**.
8. J. Ng, **Alterman, B. L.** (12th of 13), et al., "The may 2024 storm: The cusps and dayside magnetopause in simulated soft x-rays," *Geophysical Research Letters*, Oct. 2026. DOI: 10.1029/2025GL120479
9. K. Ogasawara, **Alterman, B. L.** (4th of 13), et al., "Resolving compositional features of solar wind source regions near the heliospheric current sheet at 0.3 au," *The Astrophysical Journal*, Sep. 2026. DOI: 10.3847/1538-4357/ae9153
10. B. J. Vasquez, **Alterman, B. L.** (15th of 18), et al., "Solar orbiter's passage through comet leonard's tail while in the he^{+} focusing cone," *The Astrophysical Journal*, Feb. 2026. DOI: 10.3847/1538-4357/ae2756
11. Yogesh, **Alterman, B. L.** (14th of 22), et al., "Solar wind heating near the sun: A radial evolution approach," *The Astrophysical Journal*, Mar. 2026. DOI: 10.3847/1538-4357/ae4582 **14 Citations**.
12. **Alterman, B. L.**, "Characterizing the impact of alfvén wave forcing in interplanetary space on the distribution of near-earth solar wind speeds," *The Astrophysical Journal Letters*, May 2025. DOI: 10.3847/2041-8213/add0a6 **8 Citations**.
13. **Alterman, B. L.**, (1st of 4), et al., "The transition from slow to fast wind as observed in composition observations," *Astronomy and Astrophysics*, Feb. 2025. DOI: 10.1051/0004-6361/202451550 **15 Citations**.
14. **Alterman, B. L.**, (1st of 5), et al., "Heavy ion abundances evolve with solar activity," *Astronomy and Astrophysics*, Aug. 2025. DOI: 10.1051/0004-6361/202554299 **9 Citations**.
15. **Alterman, B. L.** and R. D'Amicis, "Cross helicity and the helium abundance as an in situ metric of solar wind acceleration," *The Astrophysical Journal Letters*, Apr. 2025. DOI: 10.3847/2041-8213/adb48e **19 Citations**.
16. C. P. Brown, **Alterman, B. L.** (6th of 7), et al., "Evaluating the parker model with the trans-heliospheric survey," *Geophysical Research Letters*, Jun. 2025. DOI: 10.1029/2025GL115186 **3 Citations**.
17. R. D'Amicis, **Alterman, B. L.** (16th of 34), et al., "On alfvénic turbulence of solar wind streams observed by solar orbiter during march 2022 perihelion and their source regions," *Astronomy and Astrophysics*, Jan. 2025. DOI: 10.1051/0004-6361/202451686 **14 Citations**.
18. J. Huang, **Alterman, B. L.** (10th of 23), et al., "The temperature anisotropy and helium abundance features of alfvénic slow solar wind observed by parker solar probe, helios, and wind missions," *The Astrophysical Journal Letters*, Jun. 2025. DOI: 10.3847/2041-8213/ade0ac **27 Citations**.
19. S. A. Livi, **Alterman, B. L.** (11th of 49), et al., "The compact dual ion composition experiment (codice) for the imap mission," *Space Science Reviews*, Dec. 2025. DOI: 10.1007/s11214-025-01251-w **10 Citations**.
20. Y. J. Rivera, **Alterman, B. L.** (11th of 18), et al., "Observational constraints on the radial evolution of o^{6+} temperature and differential flow in the inner heliosphere," *The Astrophysical Journal Letters*, Sep. 2025. DOI: 10.3847/2041-8213/adfa97 **8 Citations**.
21. Y. J. Rivera, **Alterman, B. L.** (21st of 21), et al., "Differentiating the acceleration mechanisms in the slow and alfvénic slow solar wind," *The Astrophysical Journal*, Feb. 2025. DOI: 10.3847/1538-4357/ada699 **31 Citations**.
22. **Alterman, B. L.**, (1st of 5), et al., "Quiet-time spectra of suprathermal heavy ions near 1 au in solar cycles 23 and 24," *The Astrophysical Journal Letters*, Apr. 2024. DOI: 10.3847/2041-8213/ad2deb **1 Citations**.
23. P. Louarn, **Alterman, B. L.** (21st of 30), et al., "Skewness and kurtosis of solar wind proton distribution functions: The normal inverse-gaussian model and its implications," *Astronomy and Astrophysics*, Feb. 2024. DOI: 10.1051/0004-6361/202347874 **5 Citations**.
24. Y. J. Rivera, **Alterman, B. L.** (16th of 16), et al., "Mixed source region signatures inside magnetic switchback patches inferred by heavy ion diagnostics," *The Astrophysical Journal*, Oct. 2024. DOI: 10.3847/1538-4357/ad7815 **13 Citations**.
25. **Alterman, B. L.**, (1st of 5), et al., "Solar cycle variation of 0.3-1.29 mev $nucleon^{-1}$ heavy ion composition during quiet times near 1 au in solar cycles 23 and 24," *The Astrophysical Journal*, Jul. 2023. DOI: 10.3847/1538-4357/acd24a **6 Citations**.
26. E. Johnson, **Alterman, B. L.** (13th of 17), et al., "Anterograde collisional analysis of solar wind ions," *The Astrophysical Journal*, Jun. 2023. DOI: 10.3847/1538-4357/accc32 **8 Citations**.
27. S. Livi, **Alterman, B. L.** (9th of 33), et al., "First results from the solar orbiter heavy ion sensor," *Astronomy and Astrophysics*, Aug. 2023. DOI: 10.1051/0004-6361/202346304 **34 Citations**.
28. B. A. Maruca, **Alterman, B. L.** (3rd of 12), et al., "The trans-heliospheric survey. radial trends in plasma parameters across the heliosphere," *Astronomy and Astrophysics*, Jul. 2023. DOI: 10.1051/0004-6361/202345951 **27 Citations**.
29. M. J. West, **Alterman, B. L.** (15th of 42), et al., "Defining the middle corona," *Solar Physics*, Jun. 2023. DOI: 10.1007/s11207-023-02170-1 **69 Citations**.
30. G. G. Howes, **Alterman, B. L.** (13th of 14), et al., "Revolutionizing our understanding of particle energization in space plasmas using on-board wave-particle correlator instrumentation," *Frontiers in Astronomy and Space Sciences*, Jun. 2022. DOI: 10.3389/fspas.2022.912868 **6 Citations**.

31. Y. J. Rivera, **Alterman, B. L.** (7th of 7), et al., "Manifestation of gravitational settling in coronal mass ejections measured in the heliosphere," *The Astrophysical Journal*, Sep. 2022. DOI: 10.3847/1538-4357/ac8873 **15 Citations**.
32. Y. J. Rivera, **Alterman, B. L.** (5th of 17), et al., "Deciphering the birth region, formation, and evolution of ambient and transient solar wind using heavy ion observations," *Frontiers in Astronomy and Space Sciences*, Dec. 2022. DOI: 10.3389/fspas.2022.1056347 **20 Citations**.
33. J. L. Verniero, **Alterman, B. L.** (5th of 19), et al., "Strong perpendicular velocity-space diffusion in proton beams observed by parker solar probe," *The Astrophysical Journal*, Jan. 2022. DOI: 10.3847/1538-4357/ac36d5 **66 Citations**.
34. **Alterman, B. L.**, (1st of 4), et al., "Solar wind helium abundance heralds solar cycle onset," *Solar Physics*, Apr. 2021. DOI: 10.1007/s11207-021-01801-9 **22 Citations**.
35. K. G. Klein, **Alterman, B. L.** (3rd of 15), et al., "Inferred linear stability of parker solar probe observations using one- and two-component proton distributions," *The Astrophysical Journal*, Mar. 2021. DOI: 10.3847/1538-4357/abd7a0 **70 Citations**.
36. M. M. Martinović, **Alterman, B. L.** (4th of 4), et al., "Ion-driven instabilities in the inner heliosphere. i. statistical trends," *The Astrophysical Journal*, Dec. 2021. DOI: 10.3847/1538-4357/ac3081 **25 Citations**.
37. Z. Němeček, **Alterman, B. L.** (6th of 9), et al., "Spectra of temperature fluctuations in the solar wind," *Atmosphere*, Sep. 2021. DOI: 10.3390/atmos12101277 **6 Citations**.
38. J. Huang, **Alterman, B. L.** (7th of 30), et al., "Proton temperature anisotropy variations in inner heliosphere estimated with the first parker solar probe observations," *The Astrophysical Journal Supplement Series*, Feb. 2020. DOI: 10.3847/1538-4365/ab74e0 **105 Citations**.
39. M. M. Martinović, **Alterman, B. L.** (11th of 21), et al., "The enhancement of proton stochastic heating in the near-sun solar wind," *The Astrophysical Journal Supplement Series*, Feb. 2020. DOI: 10.3847/1538-4365/ab527f **52 Citations**.
40. J. L. Verniero, **Alterman, B. L.** (10th of 22), et al., "Parker solar probe observations of proton beams simultaneous with ion-scale waves," *The Astrophysical Journal Supplement Series*, May 2020. DOI: 10.3847/1538-4365/ab86af **128 Citations**.
41. T. Woolley, **Alterman, B. L.** (7th of 13), et al., "Proton core behaviour inside magnetic field switchbacks," *Monthly Notices of the Royal Astronomical Society*, Nov. 2020. DOI: 10.1093/mnras/staa2770 **42 Citations**.
42. **Alterman, B. L.** and J. C. Kasper, "Helium variation across two solar cycles reveals a speed-dependent phase lag," *The Astrophysical Journal Letters*, Jul. 2019. DOI: 10.3847/2041-8213/ab2391 **52 Citations**.
43. L. D. Woodham, **Alterman, B. L.** (6th of 6), et al., "Parallel-propagating fluctuations at proton-kinetic scales in the solar wind are dominated by kinetic instabilities," *The Astrophysical Journal Letters*, Oct. 2019. DOI: 10.3847/2041-8213/ab4adc **52 Citations**.
44. **Alterman, B. L.**, (1st of 4), et al., "A comparison of alpha particle and proton beam differential flows in collisionally young solar wind," *The Astrophysical Journal*, Sep. 2018. DOI: 10.3847/1538-4357/aad23f **105 Citations**.
45. K. G. Klein, **Alterman, B. L.** (2nd of 5), et al., "Majority of solar wind intervals support ion-driven instabilities," *Physical Review Letters*, May 2018. DOI: 10.1103/PhysRevLett.120.205102 **75 Citations**.

Other Publications

1. **Alterman, B. L.**, "Plasma data sources in the omni database," *Research Notes of the American Astronomical Society*, Jun. 2022. DOI: 10.3847/2515-5172/ac7a2f **1 Citations**.
2. Y. (Collado-Vega, **Alterman, B. L.** (13th of 31), et al., "Space weather operations and the need for multiple solar observational vantage points," Jul. 2022. `scixplorer.org/abs/2022dsss.rept..220C1`.
3. A. Galli, **Alterman, B. L.** (8th of 8), et al., "Measuring interstellar neutrals in-situ: A critical contribution to heliospheric science," Jul. 2022. `scixplorer.org/abs/2022dsss.rept..326G1`.
4. M. N. Kenny, **Alterman, B. L.** (23rd of 51), et al., "Gender diversity in heliophysics," Jul. 2022. `scixplorer.org/abs/2022dsss`
5. Y. J. Rivera, **Alterman, B. L.** (9th of 17), et al., "Deciphering the birth region, formation, and evolution of ambient and transient solar wind using heavy ion observations," Jul. 2022. `scixplorer.org/abs/2022dsss.rept..295R1`.
6. J. L. Verniero, **Alterman, B. L.** (6th of 12), et al., "Guiding heliophysics toward an enhanced transdisciplinary framework," Jul. 2022. `scixplorer.org/abs/2022dsss.rept..299V1`.
7. **Alterman, B. L.**, (1st of 5), et al., *Solar cycle variation of suprathermal heavy ion composition and spectra during quiet times near 1 au*, Dec. 2021. DOI: 10.1002/essoar.10509340.1
8. W. Barnes, **Alterman, B. L.** (7th of 9), et al., "Toward a sustainable software development model for heliophysics," Oct. 2020. DOI: 10.5281/zenodo.4091384
9. P. C. Brandt and **Alterman, B. L.**, "Expanding the realm of solar and space physics: Exploration of the outer heliosphere and local interstellar medium," Oct. 2020.
10. E. I. Mason, **Alterman, B. L.** (6th of 6), et al., "The need for consistent, comprehensive inner heliosphere data," Sep. 2020. DOI: 10.5281/zenodo.4024810

11. S. J. Schonfeld, **Alterman, B. L.** (3rd of 4), et al., "Helioweb: A resource for 21st century science," Sep. 2020. DOI: 10.5281/zenodo.4060331
12. J. L. Verniero, **Alterman, B. L.** (6th of 6), et al., "Guiding heliophysics toward an enhanced transdisciplinary framework," Oct. 2020. DOI: 10.5281/zenodo.4158714
13. N. A. Murphy, **Alterman, B. L.**, and D. Stansby, "Making plasma research reproducible," Feb. 2019. DOI: 10.5281/zenodo.2578291
14. N. A. Murphy, **Alterman, B. L.** (2nd of 5), et al., "Enabling scientific reproducibility in plasma research," Jul. 2019. DOI: 10.5281/zenodo.3265454
15. N. A. Murphy, **Alterman, B. L.** (6th of 45), et al., "Building an open source software ecosystem for cross-disciplinary plasma research and education," Feb. 2019. DOI: 10.5281/zenodo.2578277

PRESENTATIONS

Many listed on 0000-0001-6673-3432 and SciExplorer.

Invited Conference Presentations

1. **Alterman, B. L.**, "Later years and early careers (panel discussion)," in *SHINE Conference*, Aug. 2021.
2. **Alterman, B. L.** and J. C. Kasper, "Helium variation across two solar cycles reveals a speed-dependent phase lag," in *AGU Fall Meeting*, Dec. 2019. scixplorer.org/abs/2019AGUFM.U21B..14A1.
3. **Alterman, B. L.**, "An experimentalists introduction to the solar wind," in *SHINE Conference Student Day*, Jul. 2017.
4. **Alterman, B. L.**, "Collisions in an expanding solar wind (scene setting talk)," in *SHINE Conference*, Jul. 2017. scixplorer.org/a

Other Invited Presentations

1. **Alterman, B. L.**, "Using 30 years of solar wind helium abundance observations to derive insights about the sun as a star," in *Center for Astrophysics | Harvard & Smithsonian*, Cambridge, MA, Sep. 2026.
2. **Alterman, B. L.**, "Using 30 years of solar wind helium abundance observations to derive insights about the sun as a star," in *APS Colloquium, University of Colorado Boulder*, Boulder, CO, Oct. 2026.
3. **Alterman, B. L.**, "Using 30 years of solar wind helium abundance observations to derive insights about the sun as a star," in *Astronomy/Space Physics Seminar, University of Delaware*, Newark, DE, Oct. 2026.
4. **Alterman, B. L.**, "Using in situ helium to understand the solar wind's acceleration and how this shows up in solar wind composition observations," in *Lunar and Planetary Laboartory (University of Arizona)*, Tucson, AZ, Jan. 2026.
5. **Alterman, B. L.**, "Why is it so hard to map intermediate speed solar wind to its solar source region and how does this answer give us an amplitude independent solar cycle clock?" In *Lunar and Planetary Laboartory (University of Arizona)*, Tucson, AZ, Jan. 2026.
6. **Alterman, B. L.**, "The significance of helium in the solar wind: Insights from 1 au," in *University of New Hampshire*, Durham, NH, Jan. 2025.
7. **Alterman, B. L.**, "The significance of helium in the solar wind: Insights from 1 au," in *Science with Sibeck*, Greenbelt, MD, Apr. 2025.
8. **Alterman, B. L.**, "The significance of helium in the solar wind: Insights from 1 au," in *NASA/GSFC Heliophysics Science Directorate Seminar*, Greenbelt, MD, May 2025.
9. **Alterman, B. L.**, "From kinetics to the solar cycle: Probing the sun and heliospheric processes using in situ observations," in *Centrum Bada'n Kosmicznych PAN*, Warsaw, Poland, Jul. 2024.
10. **Alterman, B. L.**, "Using in situ observations to understand solar wind sources and predict solar cycle onset," in *NASA Johnson Space Center*, Houston, TX, Jan. 2024.
11. **Alterman, B. L.**, "From kinetics to the solar cycle: Probing the sun and heliospheric processes using in situ observations," in *Center for Astrophysics | Harvard & Smithsonian*, Cambridge, MA, Apr. 2023.
12. **Alterman, B. L.**, "From kinetics to the solar cycle: Probing the sun and heliospheric processes using in situ observations," in *Mullard Space Science Laboratory, University College London*, Surrey, UK, Jun. 2023.
13. **Alterman, B. L.**, "From kinetics to the solar cycle: Probing the sun and heliospheric processes using in situ observations," in *NASA Goddard Space Flight Center*, Greenbelt, MD, Jul. 2023.
14. **Alterman, B. L.**, "From kinetics to the solar cycle: Probing the sun and heliospheric processes using in situ observations," in *IAPS — INAF Istituto di Astrofisica e Planetologia Spaziali*, Rome, Italy, Nov. 2023.
15. **Alterman, B. L.**, "From kinetics to the solar cycle: Probing the sun and heliospheric processes using in situ observations," in *Observatoire de Paris*, Meudon, France, Nov. 2023.

16. **Alterman, B. L.**, "Status of heavy ion sensor data," in *Mullard Space Science Laboratory, University College London*, Surrey, UK, Jun. 2023.
17. **Alterman, B. L.**, "From kinetics to the solar cycle: Probing the sun and heliospheric processes using in situ observations," in *Imperial College*, London, UK, Sep. 2022.
18. **Alterman, B. L.**, "From kinetics to the solar cycle: Probing the sun and heliospheric processes using in situ observations," in *Queen Mary University*, London, UK, Sep. 2022.
19. **Alterman, B. L.**, "M/q-dependent heating observed with high time-resolution fe vdfs at a shock with solar orbiter's heavy ion sensor," in *Solar Orbiter Working Groups*, Virtual, Sep. 2022.
20. **Alterman, B. L.**, "Solar wind helium abundance predicts solar cycle onset," in *University of Arizona*, Virtual, Feb. 2021.
21. **Alterman, B. L.**, "Tracing the solar cycle with in situ helium measurements – phase lag and cycle herald," in *NASA Goddard Space Flight Center*, Greenbelt, MD, Jun. 2020.
22. **Alterman, B. L.**, "Tracing the solar cycle with solar wind helium – phase lag and heralding cycle onset," in *NASA Goddard Space Flight Center*, Greenbelt, MD, May 2020.
23. **Alterman, B. L.**, "The multi-scale solar wind," in *Southwest Research Institute*, San Antonio, TX, Mar. 2019.
24. **Alterman, B. L.**, "The multi-scale solar wind," in *Goddard Space Flight Center*, Greenbelt, MD, Mar. 2019.
25. **Alterman, B. L.**, "A comparison of alpha particle and proton beam differential flows in collisionally young solar wind," in *NASA Goddard Space Flight Center*, Greenbelt, MD, Sep. 2018.
26. **Alterman, B. L.**, "Parker solar probe – launching august," in *Capitol Visitor Center, Washington, D. C.*, Jul. 2018.

Conference Presentations

1. **Alterman, B. L.**, (1st of 31), et al., "High time resolution heavy ion sensor observations across a collisionless shock," May 2026. DOI: 10.1017/S1743921324001790
2. M. Stevens, **Alterman, B. L.** (15th of 20), et al., "Inner heliospheric current sheet reconnection as a source of ubiquitous solar wind proton beams," Aug. 2026. scixplorer.org/abs/2026cosp...46.1094S1.
3. R. C. Allen, **Alterman, B. L.** (4th of 15), et al., "The agu space physics and astronomy (spa) early career leadership advisory committee," Jun. 2025. scixplorer.org/abs/2025shin.confE...4A1.
4. **Alterman, B. L.**, (1st of 16), et al., "Interpretable machine learning for icme identification: Leveraging solar wind helium abundance, compressibility, and cross helicity," Dec. 2025. scixplorer.org/abs/2025AGUFMSM51A..03A1.
5. **Alterman, B. L.**, (1st of 20), et al., "Solar wind helium abundance: A fixed-amplitude solar activity indicator for space weather forecasting," Dec. 2025. scixplorer.org/abs/2025AGUFMSH21G2572A1.
6. **Alterman, B. L.** and R. D'Amicis, "Cross helicity and the helium abundance as an in situ metric of solar wind acceleration," Jun. 2025. scixplorer.org/abs/2025shin.confE.129A1.
7. R. D. Amicis, **Alterman, B. L.** (8th of 16), et al., "What determines the departure from equipartition of energy in alfvénic fluctuations in solar wind streams? insights from solar orbiter observations," Apr. 2025. DOI: 10.5194/egusphere-egu25-404
8. J. Buitrago-Casas, **Alterman, B. L.** (5th of 15), et al., "The agu space physics and astronomy (spa) early career leadership advisory committee," Jun. 2025. scixplorer.org/abs/2025AAS...24640402B1.
9. C. Cohen, **Alterman, B. L.** (2nd of 30), et al., "Imap's role in understanding particle injection and energization throughout the heliosphere," Dec. 2025. scixplorer.org/abs/2025AGUFMSH11A..07C1.
10. N. Davis, **Alterman, B. L.** (4th of 4), et al., "Instability constraints on proton beams in the solar wind: Theory meets observation," Dec. 2025. scixplorer.org/abs/2025AGUFMSH33E2555D1.
11. R. M. Dewey, **Alterman, B. L.** (10th of 10), et al., "Differences in heavy ion streaming in the inner heliosphere observed by solar orbiter," Dec. 2025. scixplorer.org/abs/2025AGUFMSH33D2537D1.
12. A. B. Galvin, **Alterman, B. L.** (13th of 14), et al., "Pickup ion distributions in the inner heliosphere (0.3 au to 1 au) as observed by the solar orbiter swa/heavy ion sensor," Dec. 2025. scixplorer.org/abs/2025AGUFMSH51E1213G1.
13. S. A. Livi, **Alterman, B. L.** (13th of 30), et al., "The compact dual ion composition experiment," Dec. 2025. scixplorer.org/abs
14. M. Martinović, **Alterman, B. L.** (6th of 6), et al., "How secondary population drifts regulate low-beta solar wind stability," Dec. 2025. scixplorer.org/abs/2025AGUFMSH33E2553M1.
15. M. Martinovic, **Alterman, B. L.** (8th of 8), et al., "Low proton plasma-beta temperature anisotropy constraint driven by alpha-particle drift," Jun. 2025. scixplorer.org/abs/2025shin.confE.195M1.
16. J. Ng, **Alterman, B. L.** (11th of 12), et al., "The may 2024 storm: Dayside magnetopause and cusps in simulated soft x-rays," Dec. 2025. scixplorer.org/abs/2025AGUFMSM33D2445N1.
17. **Alterman, B. L.**, "Charge-state dependent heating of fe at a cme-driven shock observed by solar orbiter," May 2024.
18. **Alterman, B. L.**, (1st of 20), et al., "Inter-calibration of solar orbiter's heavy ion sensor and suprathermal ion spectrograph," Apr. 2024. DOI: 10.5194/egusphere-egu24-13328

19. **Alterman, B. L.**, (1st of 37), et al., "Suprathermal ion observations from solar orbiter: Status of intercalibration between the heavy ion sensor and suprathermal ion spectrograph," Dec. 2024. scixplorer.org/abs/2024AGUFMSH33E2787A1.
20. C. Brown, **Alterman, B. L.** (4th of 6), et al., "Evaluating the parker model with the trans-heliospheric survey," Dec. 2024. scixplorer.org/abs/2024AGUFMSH23F..01B1.
21. K. Delano, **Alterman, B. L.** (18th of 19), et al., "Analysis of pickup ions observed by swa-his during the solar orbiter encounter with comet leonard," Dec. 2024. scixplorer.org/abs/2024AGUFMP32B...02D1.
22. A. B. Galvin, **Alterman, B. L.** (15th of 16), et al., "Variations in the he+ pickup ion distributions inside 1 au," Dec. 2024. scixplorer.org/abs/2024AGUFMSH33E2788G1.
23. J. Huang, **Alterman, B. L.** (7th of 21), et al., "Temperature anisotropy and alpha abundance features of alfvénic slow solar wind observed by parker solar probe, helios, and wind missions," Dec. 2024. scixplorer.org/abs/2024AGUFMSH31F266
24. L. M. Kistler, **Alterman, B. L.** (14th of 15), et al., "Inner source pickup ion distributions inside 1 au," Dec. 2024. scixplorer.org
25. S. Livi, **Alterman, B. L.** (8th of 16), et al., "Observations of suprathermal ions(5-75 kev) in association with shocks," Apr. 2024. DOI: 10.5194/egusphere-egu24-20809
26. S. A. Livi, **Alterman, B. L.** (7th of 16), et al., "Solar orbiter his observations of suprathermal particles (5-70 kev) in association with shocks," Dec. 2024. scixplorer.org/abs/2024AGUFMSH23C2951L1.
27. B. A. Maruca, **Alterman, B. L.** (3rd of 14), et al., "The trans-heliospheric survey: Trends in plasma parameters across the heliosphere," Aug. 2024. scixplorer.org/abs/2024shin.confE.129M1.
28. Y. Rivera, **Alterman, B. L.** (26th of 26), et al., "Comparing the radial evolution of slow and alfvénic slow solar wind with parker solar probe and solar orbiter," Dec. 2024. scixplorer.org/abs/2024AGUFMSH11B..03R1.
29. F. Allegrini, **Alterman, B. L.** (4th of 8), et al., "The advanced mass and ionic charge composition experiment (amicce)," Dec. 2023. scixplorer.org/abs/2023AGUFMSH23B..03A1.
30. **Alterman, B. L.**, "Fe heating across a shock observed by solar orbiter's heavy ion sensor," Nov. 2023.
31. **Alterman, B. L.**, "Heavy ion surfing on alfvén waves observed by solar orbiter's heavy ion sensor," Nov. 2023.
32. **Alterman, B. L.**, "Heavy ion surfing on alfven waves observed by solar orbiter's heavy ion sensor," May 2023.
33. **Alterman, B. L.**, "Heavy ion surfing on alfvén waves observed by solar orbiter's heavy ion sensor," May 2023.
34. **Alterman, B. L.**, "Mass-per-charge depending heating of iron at a collisionless shock," Jun. 2023.
35. **Alterman, B. L.**, (1st of 20), et al., "Iron heating across a shock observed by solar orbiter's heavy ion sensor," May 2023. DOI: 10.5194/egusphere-egu23-7823
36. **Alterman, B. L.**, (1st of 5), et al., "On the abundances and spectra of quiet-time suprathermal during solar cycle 23 and 24," Dec. 2023. scixplorer.org/abs/2023AGUFMSH43A..04A1.
37. M. F. Bashir, **Alterman, B. L.** (8th of 44), et al., "Recognition for all: A way forward to enhance diversity, equity and inclusion in space physics," Jul. 2023. DOI: 10.3847/25c2cfeb.bff53876
38. P. Brandt, **Alterman, B. L.** (2nd of 119), et al., "Pushing the frontier of solar & space physics: Exploration of the heliosphere and the very local interstellar medium by an interstellar probe," Jul. 2023. DOI: 10.3847/25c2cfeb.e0bf48d5
39. Y. Collado-Vega, **Alterman, B. L.** (13th of 31), et al., "Space weather operations and the need for multiple solar observational vantage points," Jul. 2023. DOI: 10.3847/25c2cfeb.1c7fc2c0
40. M. A. Dayeh, **Alterman, B. L.** (10th of 18), et al., "Psp observations of a ubiquitous suprathermal spectrum within 1 au," Dec. 2023. scixplorer.org/abs/2023AGUFMSH51C2622D1.
41. K. Delano, **Alterman, B. L.** (19th of 20), et al., "Detection of cometary ions by swa-his during solar orbiter's encounter of comet leonard," Dec. 2023. scixplorer.org/abs/2023AGUFMSH31G3048D1.
42. R. W. Ebert, **Alterman, B. L.** (3rd of 6), et al., "Plasma measurements for magnetospheric science at uranus," Jul. 2023. scixplorer.org/abs/2023LPICo2808.8113E1.
43. A. Galli, **Alterman, B. L.** (8th of 8), et al., "Measuring interstellar neutrals in-situ: A critical contribution to heliospheric science," Jul. 2023. DOI: 10.3847/25c2cfeb.5deec7eb
44. M. N. Kenny, **Alterman, B. L.** (23rd of 51), et al., "Gender diversity in heliophysics," Jul. 2023. DOI: 10.3847/25c2cfeb.0e9841dd
45. S. T. Lepri and **Alterman, B. L.**, "Heavy ion composition in the inner heliosphere from solar orbiter," Jun. 2023.
46. P. Louarn, **Alterman, B. L.** (14th of 19), et al., "Interpretation of the skewness and kurtosis of the sw proton distributions observed by solar orbiter (pas/swa): Constraints on the heating and acceleration using the 'normal-inverse gaussian' model.," Dec. 2023. scixplorer.org/abs/2023AGUFMSH34B..01L1.
47. V. Martinez Pillet, **Alterman, B. L.** (8th of 24), et al., "Solar physics in the 2020s: Dkist, parker solar probe, and solar orbiter as a multi-messenger constellation," 2023. DOI: 10.1017/S1743921323001266
48. B. Maruca, **Alterman, B. L.** (3rd of 12), et al., "The trans-heliospheric survey: Trends in plasma parameters across the heliosphere," Dec. 2023. scixplorer.org/abs/2023AGUFMSH43D3194M1.

49. E. I. Mason, **Alterman, B. L.** (3rd of 8), et al., "Enabling critical solar wind research via consistent, comprehensive inner heliosphere data coverage," Jul. 2023. DOI: 10.3847/25c2cfeb.d070989e
50. A. Pontoni, **Alterman, B. L.** (3rd of 6), et al., "Plasma instrument capabilities at southwest research institute," Jul. 2023. scixplorer.org/abs/2023LPICo2808.8118P1.
51. Y. J. Rivera, **Alterman, B. L.** (9th of 17), et al., "Deciphering the birth region, formation, and evolution of ambient and transient solar wind using heavy ion observations," Jul. 2023. DOI: 10.3847/25c2cfeb.6bd5e78b
52. J. L. Verniero, **Alterman, B. L.** (6th of 12), et al., "Guiding heliophysics toward an enhanced transdisciplinary framework," Jul. 2023. DOI: 10.3847/25c2cfeb.28b02668
53. M. J. West, **Alterman, B. L.** (15th of 42), et al., "Defining the middle corona," Dec. 2023. scixplorer.org/abs/2023AGUFMSH51
54. **Alterman, B. L.**, (1st of 25), et al., "Heavy ion heating observed by solar orbiter his across a shock," Jun. 2022. scixplorer.org
55. **Alterman, B. L.**, (1st of 25), et al., "Heavy ion vdfs observed at a shock with solar orbiter's heavy ion sensor," Jul. 2022. scixplorer.org/abs/2022cosp...44.1092A1.
56. **Alterman, B. L.**, (1st of 27), et al., "Fe ion heating across a shock observed by solar orbiter's heavy ion sensor," Dec. 2022. scixplorer.org/abs/2022AGUFMSH42D2320A1.
57. **Alterman, B. L.**, (1st of 5), et al., "Quiet time suprathermals across solar cycle 23 & 24: Abundances and spectral indices," May 2022. DOI: 10.5194/egusphere-egu22-8953
58. **Alterman, B. L.**, (1st of 5), et al., "Solar cycle variation of suprathermal heavy ion composition and spectra during quiet times near 1 au during solar cycles 23 and 24," Oct. 2022. scixplorer.org/abs/2022tess.conf20104A1.
59. R. M. Dewey and **Alterman, B. L.**, "In situ plasma composition of oct-nov 2021 icmes: His observations of prominence material," Sep. 2022.
60. R. Dewey, **Alterman, B. L.** (10th of 10), et al., "A rare in-situ measurement of prominence plasma inside an icme as observed by the heavy ion sensor on solar orbiter," Jul. 2022. scixplorer.org/abs/2022cosp...44.1524D1.
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62. A. Galli, **Alterman, B. L.** (8th of 8), et al., "The potential of the interstellar probe for measuring interstellar neutrals in-situ," Jul. 2022. scixplorer.org/abs/2022cosp...44.3205G1.
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65. E. T. Johnson, **Alterman, B. L.** (4th of 11), et al., "Anterograde collisional analysis of solar wind ions," Dec. 2022. scixplorer.o
66. S. T. Lepri, **Alterman, B. L.** (7th of 10), et al., "Early solar wind studies from the solar orbiter heavy ion sensor," Dec. 2022. scixplorer.org/abs/2022AGUFMSH15A..05L1.
67. S. Livi, **Alterman, B. L.** (5th of 15), et al., "Preferential acceleration of suprathermal particles at shocks," May 2022. DOI: 10.5194/egusphere-egu22-5984
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73. B. Maruca, **Alterman, B. L.** (3rd of 12), et al., "Radial trends in plasma parameters across the heliosphere," Dec. 2022. scixplorer.org/abs/2022AGUFMSH35D1837M1.
74. Y. Rivera and **Alterman, B. L.**, "Investigating he+ in the inner heliosphere with the ace/swics and the solar orbiter/his," Sep. 2022.
75. Y. Rivera, **Alterman, B. L.** (5th of 7), et al., "Gravitational settling and the fip effect in interplanetary cmes and associated source regions," Jun. 2022. scixplorer.org/abs/2022shin.confE.122R1.
76. Y. Rivera, **Alterman, B. L.** (7th of 7), et al., "Gravitational settling and the fip effect in interplanetary cmes and associated source regions," Oct. 2022. scixplorer.org/abs/2022tess.conf111b011.

77. M. L. Stevens, **Alterman, B. L.** (12th of 14), et al., “Energy partition between the solar wind proton ”core” and ”tail” distributions in the inner heliosphere,” Dec. 2022. scixplorer.org/abs/2022AGUFMSH36B..07S1.
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87. T. Woolley, **Alterman, B. L.** (7th of 13), et al., “Proton core behaviour inside magnetic field switchbacks,” Dec. 2020. scixplorer.org/abs/2020AGUFMSH0290004W1.
88. **Alterman, B. L.**, (1st of 24), et al., “Observations of non-thermal structure in the proton velocity distribution function using proton beams below 0.3 au from parker solar probe and at 1 au with wind,” Dec. 2019. scixplorer.org/abs/2019AGUF
89. **Alterman, B. L.** and J. C. Kasper, “Helium variation across two solar cycles reveals a speed-dependent phase lag,” May 2019. scixplorer.org/abs/2019shin.confE..48A1.
90. J. Huang, **Alterman, B. L.** (10th of 24), et al., “Alfvenic slow solar wind and proton temperature anisotropy in inner heliosphere by psp observations,” Dec. 2019. scixplorer.org/abs/2019AGUFMSH13C3452H1.
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