

## Curriculum Vita

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### **CHRONOLOGY OF EDUCATION**

1986-1991: University of Kansas, Lawrence, KS  
PhD in Physics, January 1991.  
Thesis Title: "Proton Acceleration in Structured Collisionless Shocks"  
1983-1986: Fort Lewis College, Durango, CO  
Bachelor of Science in Physics: May, 1986  
Bachelor of Arts in Mathematics: May, 1985.

### **CHRONOLOGY OF EMPLOYMENT**

2011 – present: Professor, Lunar & Planetary Laboratory, University of Arizona, Tucson, AZ  
2012 – 2016: Associate Department Head, Lunar & Planetary Laboratory, University of Arizona, Tucson, AZ  
2007 – 2011: Associate Professor, Lunar & Planetary Laboratory, University of Arizona, Tucson, AZ  
2004 – 2007: Assistant Professor, Lunar & Planetary Laboratory, University of Arizona, Tucson, AZ  
2003: Assistant Research Scientist, Lunar & Planetary Laboratory, University of Arizona, Tucson, AZ  
1997-2003: Sr. Research Associate, Lunar & Planetary Laboratory, University of Arizona, Tucson, AZ  
1993-1997: Research Associate, Lunar & Planetary Laboratory, University of Arizona, Tucson, AZ  
1991-1993: Research Associate, Astronomy Unit, Queen Mary & Westfield College, London, UK  
1986-1991: Research and Teaching Assistant, Physics Department, University of Kansas, Lawrence, KS  
1986: Summer Research Assistant, Los Alamos National Laboratory, Los Alamos, NM

### **HONORS AND AWARDS**

2005: Recipient of a National Science Foundation's Early CAREER award.

2017: Recipient of the 2017 Blitzer Award (“Professor Leon and Pauline Blitzer Award for Excellence in Teaching of Physics and Related Science”).

### **COMMITTEE SERVICE**

2019-2020: committee member of the NSF/NASA sponsored “Next Steps Space Weather Benchmarks Workshop”, as a core member of the subgroup on “Ionizing Radiation”.

2017-2018: Member of the National Academy of Science Committee on “Best Practices for a Future Open-Source Policy for NASA”

2016-present: Member of the External Advisory Committee (EAC) for the Los Alamos Center for Space and Earth Science (CSES).

2013-2018: Member of the NRC Research Assistantship Program (RAP) review panel (Physics).

2013: Member of the 2013 NASA Heliophysics Missions Senior Review panel.

2012: Member of the Science Organizing Committee, and Co-Editor of the Conference Proceedings for the Solar Wind 13 Conference, Kona, HI, June, 2012.

2010-2012: National Academy of Sciences Heliophysics Decadal Survey, member of the Solar and Heliospheric Physics panel

2010-2012: National Academy of Sciences Heliophysics Decadal Survey, member of the Theory and Modeling working group

2009-2010: NASA’s Living With a Star (LWS) TR&T Steering Committee.

2008-2010: Secretary for the SPA/SH subdivision of the American Geophysical Union (AGU) (Elected Position)

2008: Member of the Scientific Organizing Committee for the AGU Chapman Conference “Universal Heliospherical Processes”, held in Savannah, GA, 10-14 Nov, 2008.

2006: NASA Data and Modeling Centers Senior Review Panel. The panel reviewed NASA’s four data and modeling centers, including the National Space Science Data Center (NSSDC), Space-Physics Data Facility (SPDF), Solar-Physics Data Center (SDAC), and Coordinated Computing and Modeling Center (CCMC). The meeting was held at Goddard Space-Flight Center, May 1-3, 2006. The final report was submitted in June, 2006

([http://science.hq.nasa.gov/sun/docs/DMC\\_SR\\_2006\\_Final\\_Report.pdf](http://science.hq.nasa.gov/sun/docs/DMC_SR_2006_Final_Report.pdf)).

2006: Member of the Scientific Organizing Committee for ISROSES (International Symposium on Recent Observations and Simulations of the Sun-Earth System) to be held Sept. 17-22, 2006, in Varna, Bulgaria.

2005-2008: NASA’s Solar and Heliospheric Management Operations Working Group (SH-MOWG).

2004-2008: Steering Committee for NSF’s SHINE Program. SHINE (Solar, Heliospheric, Interplanetary Environment) is an NSF-sponsored annual workshop with over 150 participants covering topical science issues in the community.

2004: NASA’s Living With a Star (LWS) TR&T Steering Committee.

2004: Co-organized the special science session “Voyager and Beyond: Exploring the Outer Heliosphere”, for the fall meeting of the American Geophysical Union held in San Francisco, Dec., 2004.

- 2003-2004: Working Group Leader for NSF's SHINE Program.
- 2003: Co-organized the special science session "The Termination Shock, Heliosheath, and Heliopause", for the fall meeting of the American Geophysical Union, held in San Francisco, Dec., 2003.
- 2000-2003: Associate Editor for Geophysical Research Letters.
- 1996: Co-organized a special science session on the Physics of the Outer Heliosphere for the fall meeting of the American Geophysical Union, held in San Francisco, Dec., 1996.

## **PUBLICATIONS/CREATIVE ACTIVITY (PUBLISHED or IN PRESS)**

### ***Chapters in Scholarly Books and Monographs***

1. **J. Giacalone**, J.R. Jokipii, and J. Kota, "Diffusive Compression Acceleration" Geophysical Monograph Series, vol. 156, pp. 41, 2005.
2. **J. Giacalone**, "Energetic Particle Transport", in Heliophysics II: Energy Conversion Processes, Cambridge University Press, C. Schrijver and G. Siscoe, eds., 2010.

### ***Refereed Journal Articles (published or accepted in final form)***

1. D. Winske, **J. Giacalone**, M.F. Thomsen, and M.M. Mellott "A comparative study of plasma heating by ion acoustic and modified two stream instabilities at quasi-perpendicular shocks" J. Geophys. Res., 92, 4411, 1987.
2. **J. Giacalone**, T.P. Armstrong, and R.B. Decker "The effect of magnetic overshoot on shock drift acceleration" J. Geophys. Res., 96, 3621, 1991.
3. **J. Giacalone**, D. Burgess, S.J. Schwartz, and D.C. Ellison "Hybrid simulations of protons strongly accelerated by a parallel collisionless shock" Geophys. Res. Lett., 19, 433, 1992.
4. **J. Giacalone** "Shock drift acceleration of energetic protons at planetary bow shocks" J. Geophys. Res., 97, 8307, 1992.
5. **J. Giacalone**, D. Burgess, S.J. Schwartz, and D.C. Ellison "Ion injections and acceleration at parallel shocks: Comparisons of self-consistent plasma simulations and existing theories" Astrophys. J., 402, 550, 1993.
6. **J. Giacalone**, S.J. Schwartz, and D. Burgess "Suprathermal ions in association with SLAMS: Observations" Geophys. Res. Lett., 2, 149, 1993.
7. D.C. Ellison, **J. Giacalone**, D. Burgess, and S.J. Schwartz "Simulations of particle acceleration in parallel shocks: direct comparison between Monte Carlo and one-dimensional hybrid codes" J. Geophys. Res., 98, 21,085, 1993.
8. J.R. Jokipii, J. Kota, and **J. Giacalone** "Perpendicular transport in one- and two-dimensional shock simulations" Geophys. Res. Lett., 20, 1759, 1993.
9. **J. Giacalone**, J.R. Jokipii, and J. Kota "Ion injection and acceleration at quasi-perpendicular shocks" J. Geophys. Res., 99, 19,351, 1994.
10. **J. Giacalone**, S.J. Schwartz, and D. Burgess "Artificial spacecraft in hybrid simulations of the quasi-parallel Earth's bow shock: Analysis of time series versus spatial profiles and a separation strategy for CLUSTER" Ann. Geophys., 12, 591, 1994.

11. G. Gloeckler, J.R. Jokipii, **J. Giacalone**, and J. Geiss "Concentration of pickup ions H and He in the solar wind" *Geophys. Res. Lett.*, 21, 1565, 1994.
12. **J. Giacalone** and J.R. Jokipii "Charged-particle motion in multidimensional magnetic-field turbulence" *Astrophys. J. Lett.*, 430, L137, 1994.
13. **J. Giacalone** "On the cross-field diffusion of ions in one- and two-dimensional hybrid simulations" *Geophys. Res. Lett.*, 21, 2441, 1995.
14. **J. Giacalone** and J.R. Jokipii "Simulations of pickup ion acceleration at quasi-perpendicular shocks" *Space Sci. Rev.*, 72, 441, 1995.
15. J.R. Jokipii, J. Kota, **J. Giacalone**, T.S. Horbury, E.J. Smith, "Interpretation and consequences of large-scale magnetic variances observed at high heliographic latitudes" *Geophys. Res. Lett.*, 22, 3385, 1995.
16. **J. Giacalone** and J.R. Jokipii "Perpendicular transport in shock acceleration" *J. Geophys. Res.*, 101, 11,095, 1996.
17. J.R. Jokipii and **J. Giacalone** "The acceleration of pickup ions" *Space Sci. Rev.*, 78, 137, 1996
18. **J. Giacalone**, J.R. Jokipii, R.B. Decker, S.M. Krimigis, M. Scholer, and H. Kucharek "Pre-acceleration of anomalous cosmic rays in the inner heliosphere" *Astrophys. J.*, 486, 471, 1997
19. **J. Giacalone**, D. Burgess, S.J. Schwartz, and D.C. Ellison "Injection and acceleration of thermal protons at quasi-parallel shocks: A hybrid simulation parameter survey" *J. Geophys. Res.*, 102, 19,789, 1997.
20. **J. Giacalone** and J.R. Jokipii "Spatial variation of accelerated pickup ions at corotating interaction regions" *Geophys. Res. Lett.*, 24, 1723, 1997.
21. **J. Giacalone** "Cosmic-ray transport coefficients" *Space Sci. Rev.*, 83, 351, 1998.
22. J.R. Jokipii and **J. Giacalone** "The theory of anomalous cosmic rays" *Space Sci. Rev.*, 83, 123, 1998.
23. **J. Giacalone** and J.R. Jokipii "Injection and acceleration of pickup ions at the termination shock" *Space Sci. Rev.*, 83, 282, 1998.
24. **J. Giacalone** and J.R. Jokipii "The pre-acceleration of anomalous cosmic rays in the inner heliosphere" *Space Sci. Rev.*, 83, 291, 1998.
25. **J. Giacalone** "Particle transport and acceleration at corotating interaction regions" *Adv. Space Res.*, 23, 581, 1999
26. **J. Giacalone** and J.R. Jokipii "The transport of cosmic rays across a turbulent magnetic field" *Astrophys. J.*, 520, 204, 1999
27. **J. Giacalone** and D.C. Ellison "Three-dimensional hybrid simulations of particle injection and acceleration at quasi-perpendicular shocks" *J. Geophys. Res.*, 105, 12,541, 2000
28. **J. Giacalone**, J.R. Jokipii, and J.E. Mazur "Small-scale gradients and large-scale diffusion of charged particles in the heliospheric magnetic field" *Astrophys. J. Lett.*, 532, L75, 2000
29. J.E. Mazur, G.M. Mason, J.R. Dwyer, **J. Giacalone**, J.R. Jokipii, and E.C. Stone "Interplanetary magnetic field line mixing deduced from impulsive solar flare particles" *Astrophys. J. Lett.*, 532, L75, 2000
30. M. Scholer, H. Kucharek, **J. Giacalone** "Cross-field diffusion of charged particles and the problem of ion injection and acceleration at quasi-perpendicular shocks" *J. Geophys. Res.*, 105, 18,285, 2000.

31. **J. Giacalone** "The latitudinal transport of energetic particles associated with corotating interaction regions" *J. Geophys. Res.*, 106, 15881, 2001
32. **J. Giacalone** and J.R. Jokipii "The transport of energetic particles and cosmic rays in the heliosphere" *Adv. Space Res.*, 27, 461, 2001.
33. **J. Giacalone**, J.R. Jokipii, and J. Kota "Particle acceleration in solar wind compression regions" *Astrophysical Journal*, 573, 845, 2002.
34. **J. Giacalone** "The Physics of Particle Acceleration by Collisionless Shocks" *Plan. & Space Sci.* vol. 51, pp. 659, 2003.
35. M. Zhang, R.B. McKibben, C. Lopate, J.R. Jokipii, **J. Giacalone**, and M.B. Kallenrode "Ulysses observations of solar-energetic particles from the July 14, 2000 event at high heliographic latitudes" *J. Geophys. Res.*, vol. 108, pp. SSH 4-1, 2003.
36. B. Lembege, **J. Giacalone**, M. Scholer, T. Hada, M. Hoshino, V. Krasnoselskikh, H. Kucharek, P. Savoini, and T. Terasawa "Selected Problems in Collisionless-Shock Physics" *Space Sci. Rev.*, vol. 110, pp. 161, 2004.
37. J.R. Jokipii, and **J. Giacalone** "Radial Streaming Anisotropies of Charged Particles Accelerated at the Solar Wind Termination Shock" *Astrophys. J.*, vol. 605, pp. L145, 2004.
38. **J. Giacalone** "Large-scale hybrid simulations of particle acceleration at a parallel shock" *Astrophys. J.*, vol. 609, pp. 452, 2004.
39. J.R. Jokipii, **J. Giacalone**, and J. Kota "Transverse streaming anisotropies of charged particles accelerated at the solar wind termination shock" *Astrophys. J.*, vol. 611, pp. L141, 2004.
40. **J. Giacalone** and J.R. Jokipii, "Magnetic footpoint diffusion on the Sun and its relation to the heliospheric magnetic field" *Astrophys. J.*, vol. 616, pp. 573, 2004.
41. **J. Giacalone** "Particle acceleration at shocks moving through an irregular magnetic field" *Astrophys. J.*, vol. 624, pp. 765, 2005.
42. **J. Giacalone** "The efficient acceleration of thermal protons by perpendicular shocks" *Astrophys. J.*, vol. 628, pp. L37, 2005.
43. M. Neugebauer and **J. Giacalone**, "Multispacecraft observations of interplanetary shocks: Nonplanarity and energetic particles" *J. Geophys. Res.*, vol. 110, pp. 11012106N, 2005.
44. C. Pei, J.R. Jokipii, and **J. Giacalone** "Effect of a random magnetic field on the onset times of solar particle events" *Astrophysical Journal*, vol. 641, pp. 1222, 2006.
45. **J. Giacalone**, J.R. Jokipii, and W.H. Matthaeus "Structure of the turbulent interplanetary magnetic field" *Astrophysical Journal*, vol. 641, pp. L61, 2006.
46. **J. Giacalone** and J.R. Jokipii, "Energetic-Particle Intensities and Anisotropies near the Solar Wind Termination Shock," *Astrophysical Journal*, vol. 649, pp. L137, 2006.
47. **J. Giacalone** and J. Kota "Acceleration of solar-energetic particles by shocks" *Space Science Reviews*, vol. 124, pp. 277, 2006.
48. M. Neugebauer, **J. Giacalone**, E. Chollet, D. Lario, "Variability of low-energy ion flux profiles on interplanetary shock fronts" *J. Geophys. Res.*, vol. 111, A12107, 2006.
49. J.R. Jokipii and **J. Giacalone**, "Adiabatic compression acceleration of fast charged particles" *Astrophysical Journal*, vol. 660, pp. 336, 2007.

50. **J. Giacalone** and J.R. Jokipii, "Magnetic-field amplification by shocks in turbulent fluids" *Astrophysical Journal*, vol. 663, pp. L41, 2007.
51. D. A. Roberts, **J. Giacalone**, J.R. Jokipii, M. Goldstein, T.D. Zepp, "Spectra of polar heliospheric fields and implications for field structure" *J. Geophys. Res.*, vol., 112, A08103, 2007.
52. E.E. Chollet, **J. Giacalone**, J.E. Mazur, and M. Al Dayeh, "A new phenomenon in impulsive-flare-associated energetic particles" *Astrophysical Journal*, vol., 669, pp. 615, 2007.
53. J.R. Jokipii, **J. Giacalone**, and J. Kota, "The physics of particle acceleration at the heliospheric termination shock" *Planet. Space Sci.*, vol. 55, pp. 2267, 2007.
54. **J. Giacalone** and M. Neugebauer, "The energy spectrum of energetic particles downstream of turbulent collisionless shocks" *Astrophysical Journal*, vol. 673, pp. 629, 2008
55. E.E. Chollet and **J. Giacalone**, "Multispacecraft analysis of energetic ion flux dropouts" *Astrophysical Journal*, vol. 688, pp. 1368, 2008.
56. K.C. Hsieh, P.C. Frisch, **J. Giacalone**, J. R. Jokipii, J. Kota, D.E. Larson, R.P. Lin, J.G. Luhmann, and L. Wang, "A re-interpretation of STEREO/STE Observations and its consequences" *Astrophysical Journal*, vol. 694, pp. L79, 2009.
57. **J. Giacalone** and J.R. Jokipii, "The acceleration of stationary charged dust grains by propagating collisionless shock waves" *Astrophysical Journal*, vol. 701, pp. 1865, 2009.
58. E.E. Chollet, **J. Giacalone**, R. M. Skoug, J. T. Steinberg, and J. T. Gosling "Spatial Offsets of Interplanetary Ion and Electron Source Regions" *Astrophysical Journal*, vol. 705, pp. 1492, 2009.
59. **J. Giacalone** and R.B. Decker, "The Origin of Low-Energy Anomalous Cosmic Rays at the Solar Wind Termination Shock" *Astrophysical Journal*, vol. 710, pp. 91, 2010.
60. F. Guo, and **J. Giacalone**, "The Effect of Large Scale Magnetic Turbulence on the Acceleration of Electrons by Perpendicular Collisionless Shocks" *Astrophysical Journal*, vol. 715, pp. 406, 2010
61. E.E. Chollet, **J. Giacalone**, and R. Mewaldt, "Effects of interplanetary transport on derived energetic particle source strengths," *J. Geophys. Res.*, vol. 115, CiteID , 2010.
62. K. C. Hsieh, **J. Giacalone**, J.; A. Czechowski,, M. Hilchenbach, S. Grzedzielski, J. Kota, "Thickness of the Heliosheath, Return of the Pickup Ions, and Voyager 1's crossing the Heliopause", *Astrophys. J.*, 718, L185, 2010.
63. **J. Giacalone** and D. Burgess, Interaction between inclined current sheets and the heliospheric termination shock, *Geophys. Res. Lett.*, vol., 37, CiteID CiteID L19104, 2010.
64. E.E. Chollet, and **J. Giacalone**, Evidence of Confinement of Solar-energetic Particles to Interplanetary Magnetic Field Lines, *Astrophys. J.*, 728, 64, 2011.
65. **J. Giacalone**, "Cosmic Ray Transport and Interaction with Shocks", *Space Sci. Rev.* (online first), 2011.
66. F. Guo, S. Li, H. Li, **J. Giacalone**, J.R. Jokipii, and D. Li, "On the Amplification of Magnetic Field by a Supernova Blast Shock Wave in a Turbulent Medium", *Astrophys. J.*, vol. 728, article id. 64, 2012.

67. F. Guo and **J. Giacalone**, “Particle Acceleration at a Flare Termination Shock: Effect of Large-Scale Magnetic Turbulence”, *Astrophys. J.*, 753, article id. 28, 2012.
68. **Giacalone, J.**, and J. R. Jokipii, “The longitudinal transport of energetic ions from impulsive solar flares in interplanetary space”, *Astrophys. J.*, 751, article id. L33, 2012.
69. Fraschetti, F., and **J. Giacalone**, “Early time velocity autocorrelation for charged-particles diffusion and drift in static magnetic turbulence”, *Astrophys. J.*, 755, article id. 114, 2012.
70. Lee, M.A., R. A. Mewaldt, and **J. Giacalone**, “Shock Acceleration of Ions in the Heliosphere”, *Space Sci. Rev.*, 173, 247, 2012.
71. **Giacalone, J.**, J. F. Drake, and J. R. Jokipii, “The Acceleration Mechanism of Anomalous Cosmic Rays”, *Space Sci. Rev.*, 173, 283, 2012.
72. **Giacalone, J.**, “Energetic charged particles associated with strong interplanetary shocks”, *Astrophys. J.*, 761, article id. 28, 2012.
73. Guo, F., and **J. Giacalone**, “The Acceleration of Thermal Protons at Parallel Collisionless Shocks: Three-dimensional Hybrid Simulations”, *Astrophys. J.*, 773, article id. 158, 2013.
74. Tessein, J. A., W. H. Matthaeus, M. Wan, K. T. Osman, D. Ruffolo, and **J. Giacalone**, “Association of Suprathermal Particles with Coherent Structures and Shocks”, *Astrophys. J.*, 776, article id. L8, 2013.
75. Guo, F., and **J. Giacalone**, “Small-scale Gradients of Charged Particles in the Heliospheric Magnetic Field”, *Astrophys. J.*, 780, article id 16., 2014..
76. McComas, D. M., and 41 co-authors, including **J. Giacalone**, “Integrated Science Investigation of the Sun (ISIS): Design of the Energetic Particle Investigation”, *Sp. Sci. Rev.*, (online first), 2014.
77. **J. Giacalone**, “Diffusive Shock Acceleration of High-energy Charged Particles at Fast Interplanetary Shocks: A Parameter Survey”, *Astrophys. J.*, 799, article id. 80, 2015.
78. Guo, F., and **J. Giacalone**, “The Acceleration of Electrons at Collisionless Shocks Moving Through a Turbulent Magnetic Field”, *Astrophys. J.*, 802, article id. 97, 2015.
79. F. Fraschetti and **J. Giacalone**, “Localized enhancements of energetic particles at oblique collisionless shocks”, *MNRAS*, 448, 3555, 2015.
80. **J. Giacalone** and L. L. Hood, “Hybrid simulation of the interaction of solar wind protons with a concentrated lunar magnetic anomaly”, *J. Geophys. Res.*, 120, 4081, 2015.
81. Schwadron, N.A., and 16 authors including **J. Giacalone**, “Particle Acceleration at Low Coronal Compression Regions and Shocks”, *Astrophys. J.*, 801, article id. 97, 2015.
82. Tessein, J. A., D. Ruffolo, W. H. Matthaeus, W. Minping, **J. Giacalone**, and M. Neugebauer, “Effect of coherent structures on energetic particle intensity in the solar wind at 1AU”, *Astrophys. J.*, 812, article id. 68, 2015.
83. **J. Giacalone** and J. R. Jokipii, “A new model for the Heliosphere’s IBEX Ribbon”, *Astrophys. J.*, 812, article id L9, 2015.
84. M. Neugebauer and **J. Giacalone**, “Energetic particles, tangential discontinuities, and solar flux tubes”, *J. Geophys. Res.*, 120, 8281, 2015.

85. Riley, P., R. M. Caplan, **J. Giacalone**, D. Lario, and Y. Liu, “Properties of the fast forward shock driven by the July 23, 2012 extreme coronal mass ejection”, *Astrophys. J.*, 819, article id. 57, 2016.
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88. **J. Giacalone**, “The Acceleration of Charged Particles at a Spherical Shock Moving through an Irregular Magnetic Field”, *Astrophys. J.*, 848, article id. 123, 2017.
89. Kong, X., F. Guo, **J. Giacalone**, H. Lui, and Y. Chen, “The Acceleration of High-energy Protons at Coronal Shocks: The Effect of Large-scale Streamer-like Magnetic Field Structures”, *Astrophys. J.*, 851, article id. 38, 2017.
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91. de Nolfo, G. M., A. Bruno, J. M. Ryan, S. Dalla, **J. Giacalone**, I. G. Richardson, E. R. Christian, G. A. Bazilvskaia, M. Boezio, M. Martucci, V. V. Mikhailov, and R. Munini, “Comparing Long-duration Gamma-Ray Flares and High-energy Solar Energetic Particles”, *Astrophys. J.*, 879, article id. 90, 2019.
92. Lario, D., L. Berger, R. B. Decker, R. F. Wimmer-Schweingruber, L. B. Wilson III, **J. Giacalone**, E. C. Roelof, “Evolution of Suprathermal Proton Population at Interplanetary Shocks”, *Astron. J.*, 158, 12, 2019.
93. Kong, X., F. Guo, Y. Chen, and **J. Giacalone**, “The Acceleration of Energetic Particles at Coronal Shocks and Emergence of a Double Power-law Feature in Particle Energy Spectra”, *Astrophys. J.*, 883, article id. 49, 2019.
94. Kong, X., F. Guo, C. Shen, B. Chen, Y. Chen, S. Musset, Sophie, L. Glesener, Lindsay, P. Pongkitiwanichakul, and **J. Giacalone**, “The Acceleration and Confinement of Energetic Electrons by a Termination Shock in a Magnetic Trap: An Explanation for Nonthermal Loop-top Sources during Solar Flares”, *Astrophys. J.*, 887, L37, 2019,
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98. **J. Giacalone**, R. G. Mitchell, R. C. Allen, et al., “Solar Energetic Particles Produced by a Slow Coronal Mass Ejection at  $\sim 0.25$  AU”, *Astrophys. J. Supp.*, 246, article id. 29, 2020.
99. Schwadron, N. A., S. Bale, J. Bonnell, et al., including **J. Giacalone**, “Seed particle Pre-conditioning and Acceleration Observed by the Parker Solar Probe”, *Astrophys. J. Supp.*, 246, article id. 33, 2020.



100. Leske, R. A., E. R. Christian, and C. M. S. Cohen, et al., including **J. Giacalone**, “Observations of the 2019 April 4 Solar Energetic Particle Event at the Parker Solar Probe”, *Astrophys. J. Supp.*, 246, article id.35, 2020.
101. Joyce, C., J., D. J. McComas, E.R. Christian, et al., including **J. Giacalone**, “Energetic Particle Observations from the Parker Solar Probe Using Combined Energy Spectra from the ISOIS Instrument Suite”, *Astrophys. J. Supp.*, 246, article id. 41, 2020.
102. Weidenbeck, M. E., R. Bucik, G. M. Mason, et al., including **J. Giacalone**, “<sup>3</sup>He-rich Solar Energetic Particle Observations at the Parker Solar Probe and Near Earth”, *Astrophys. J. Supp.*, 246, article id. 42, 2020.
103. Desai, M. I., D. G. Mitchell, J. R. Szaley, et al., including **J. Giacalone**, “Properties of Suprathermal-through-Energetic He Ions Associated with Stream Interaction Regions Observed over the Parker Solar Probe’s First Two Orbits”, *Astrophys. J. Supp.*, 246, article id. 56, 2020.
104. Mitchell, D. G., **J. Giacalone**, R. C. Allen, et al., “CME-Associated Energetic Ions at 0.23AU: Consideration of the Auroral Pressure Cooker Mechanism Operating in the Low Corona as a Possible Energization Process”, *Astrophys. J., Supp.*, 246, article id. 59, 2020.
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106. T. Nieves-Chinchilla, Teresa, A. Szabo, K. E. Korreck, et al., including **J. Giacalone**, “Analysis of the Internal Structure of the Streamer Blowout Observed by the Parker Solar Probe during the First Solar Encounter”, *Astrophys. J. Supp.*, 246, article id. 63, 2020.
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108. Dalla, S., G. A. de Nolfo, A. Bruno, **J. Giacalone**, T. Laitinen, S. Thomas. M. Battarbee, and M. S. Marsh, “3D Propagation of Relativistic Solar Protons Through Interplanetary Space”, *Astron. & Astrophys.*, 639, article id. A 105, 2020.
109. Horbury, T., H. O’Brien, I. Carrasco Blazquez, et al., including **J. Giacalone**, “The Solar Orbiter Magnetometer”, *Astron. & Astrophys.*, 642, id. A9, 2020.
110. Nakanotani, M., G. P. Zank, L. Adhikari, L. Zhao, L., **J. Giacalone**, M. Opher, and J. D. Richardson, “The Downwind Solar Wind: Model Comparison with Pioneer 10 Observations”, *Astrophys. J.*, 901, L23, 2020.
111. Kong, X., F. Guo, C. Shen, B. Chen, Y. Chen and **J. Giacalone**, J., “Dynamical Modulation of Solar-Flare Electron Acceleration due to Plasmoid-shock interaction in the Looptop region”, *Astrophys. J.*, 905, L16, 2020.
112. Fraschetti, F., and **J. Giacalone**, Bi-directional streaming of particles accelerated at the STEREO-A shock on 2008 March 9”, *Mon. Not. Roy. Astr. Soc.*, 499, 2, 2020.
113. **Giacalone, J.**, M. Nakanotani, G. P. Zank, J. Kota, M. Opher, and J. D. Richardson, “Hybrid Simulations of Interstellar Pickup Protons Accelerated at the Solar Wind Termination Shock at Multiple Locations”, *Astrophys. J.*, in press, 2021.

114. **Giacalone, J.**, “The Transport Equation for the Dispersal of Passive Tracers in a Non-uniform Turbulent Fluid: Numerical Simulations”, *Astrophys. J.*, in press, 2021.
115. Guo, G., **J. Giacalone**, and L. Zhao, “Shock Propagation and Associated Particle Acceleration in the Presence of Ambient Solar-Wind Turbulence”, *Frontiers*, in press, 2021.
116. Joyce, C. J., D. J. McComas, N. Schwadron, et al., including **J. Giacalone**, “Time Evolution of SIR Energetic Particle Spectra in the Inner Heliosphere”, *Astrophys. J.*, in press, 2021

***Refereed conference proceedings:***

1. **J. Giacalone** and J.R. Jokipii "Low-energy ion acceleration at quasi-perpendicular shocks" Proceedings of the 8th solar wind conference, AIP conference proceedings 382, eds. D. Winterhalter et al., Woodbury, NY, 1996
2. **J. Giacalone** "Particle transport, composition, and acceleration at shocks in the heliosphere" AIP Conference Proceedings, 528, Mewaldt et al. eds, p. 258., 2000.
3. **J. Giacalone**, J.R. Jokipii, and J.E. Mazur "Solar-energetic particles vs. global cosmic-ray diffusion" AIP Conference Proceedings, 528, Mewaldt et al. eds, p. 157., 2000.
4. J.E. Mazur, G.M. Mason, J.R. Dwyer, **J. Giacalone**, J.R. Jokipii, and E.C. Stone "The mixing of interplanetary magnetic field lines: A significant transport effect in studies of the energy spectra of impulsive flares" AIP Conference Proceedings, 528, Mewaldt et al. eds,p.47., 2000.
5. **J. Giacalone** "The injection problem" *Cospar Colloquium Ser. (COSPAR Colloquium was held in Potsdam, Germany, July 2000)*, vol. 11, p. 528, 2001.
6. **J. Giacalone**, J.R. Jokipii, and J. Kota "Non-shock diffusive acceleration in regions of solar wind compression" AIP Conference Proceedings, (proceedings of joint ACE/SOHO Symposium held in Bern, Switzerland, March 2001), vol. 598, p 339, 2001.
7. **J. Giacalone** "The heliospheric magnetic field probed with fast charged particles" *Cospar Colloquium Ser.*, (COSPAR Colloquium was held in Beijing, China, Sep. 2001), vol 14., p. 217, 2002.
8. **J. Giacalone** and J.R. Jokipii "Irregular magnetic fields and energetic particles near the termination shock" AIP Conf. Proc., vol. 719, pp. 266, 2004.
9. **J. Giacalone** "The importance of field-line meandering in particle acceleration at shocks" AIP Conf. Proc., vol. 781, pp. 213, 2005.
10. **J. Giacalone** and J.R. Jokipii "Test-particle Numerical Simulations of Energetic Particles Near the Termination Shock" AIP Conf. Proc., vol., 858, pp. 202, 2006.
11. **J. Giacalone** "The hybrid simulation applied to space plasma flows" *Astronomical Society of the Pacific Conf. Ser.*, vol. 359. pp., 241, 2006.
12. **J. Giacalone** and J.R. Jokipii, “Large-scale turbulence, shocks, and charged-particle acceleration” AIP Conf. Proc., vol., 932, pp. 243, 2007.
13. **J. Giacalone**, “Particle Acceleration at a perpendicular shock in the limit of weak pitch-angle scattering” AIP Conf. Proc., vol. 1039, pp. 227, 2008.
14. M. Neugebauer, and **J. Giacalone**, “Progress in the Study of Interplanetary Discontinuities” AIP Conf. Proc., vol., 1216, pp. 194, 2010.

15. E.E. Chollet, R. Skoug, J. Steinberg, N. Crooker, and **J. Giacalone**, "Reconnection and Disconnection: Observations of Suprathermal Electron Heat Flux Dropouts" AIP Conf. Proc., vol. 1216, pp. 600, 2010.
16. **J. Giacalone**, "The Acceleration of Inner-Source Pickup Ions by a Propagating Interplanetary Shock", AIP Conf. Proc., vol. 1302, pp. 119, 2011.
17. J.R. Jokipii, **J. Giacalone**, K. C. Hsieh, and J. Kota, "The Structure of the IBEX Ribbon: a Reflection of Interstellar Turbulence?", AIP Conf. Proc., vol. 1302, pp. 92, 2011.
18. E. J. Greenfield, J. R. Jokipii, and **J. Giacalone**, "The Physics of Partially Ionized Gas with Applications to Processes in the Interstellar Medium", AIP Conf. Proc., vol. 1366, p. 115, 2011.
19. **J. Giacalone** and J. R. Jokipii, "Suprathermal Ions Associated with Strong Interplanetary Shocks", AIP Conf. Proc. AIP Conf. Proc., vol. 1436, p. 130, 2012.
20. Guo, F., and **J. Giacalone**, "The acceleration of electrons at perpendicular shocks and its implication for solar energetic particle events", AIP Conf. Proc., vol. 1500, p. 93, 2012.
21. **J. Giacalone**, "The Acceleration of Thermal Ions at a Strong, Quasi-Parallel Interplanetary Shock: A Hybrid Simulation", J. Physics Conf. Ser., 900, article id. 012008, 2017.

## **INVITED PRESENTATIONS**

### *Colloquia*

1. "Shock acceleration" Royal Astronomical Society, Oct. 1992
2. "Particle acceleration in astrophysical plasmas" University of Kansas Colloquium, Jan. 1993
3. "Interstellar atoms in the solar system: From ionization to cosmic rays" University of Arizona, Lunar & Planetary Laboratory Colloquium, Dec. 1995
4. "Energetic nuclei associated with interplanetary disturbances corotating with the sun" University of Arizona, Lunar & Planetary Laboratory Colloquium, Apr. 1997
5. "Energetic Particles in the Heliosphere" Los Alamos National Laboratory, Feb. 1998
6. "Cosmic-Ray Transport in the Heliosphere: A New Paradigm" University of Kansas, Mar. 2002
7. "A New Paradigm for the Transport of Energetic Solar Particles in Interplanetary Space" Lunar & Planetary Lab., University of Arizona, Oct. 2002
8. "Accelerating Particles from Thermal to Cosmic-Ray Energies by Astrophysics Shocks" Physics Department, University of California at Riverside, April 2003.
9. "The origin of high-energy charged particles in the heliosphere" Boston University Astronomy Dept., April 2009.
10. "Origins and Variations in High-Energy Charged Nuclei in the Solar System" Lunar & Planetary Colloquium, Oct. 27, 2009.
11. "The Heliosphere after Voyager and IBEX", High Altitude Observatory Colloquium Series, Feb. 20, 2013.

### *Seminars*

1. "The acceleration of charged-particles by astrophysical shocks" Queen Mary & Westfield College Astrophysics Seminar, Feb. 1992.
2. "Particle acceleration in astrophysical shocks" London Space-Plasma Seminar, Dec. 1992.
3. "Cosmic rays in the heliosphere"(part a 40+ member workshop) International Space Science Institute, Bern, Switzerland March 1997.
4. "Collisionless aspects of the Earth's bow shock"(part a 13-member team) International Space Science Institute, Bern, Switzerland, Jan 1999-Jan 2001.
5. "Maximum Energy in Shock Acceleration: Implications for Solar-Energetic Particles" California Institute of Technology, brown-bag seminar, November, 2003.
6. "Diffusive Shock Acceleration in the Heliosphere" University of Maryland, Space Plasma Physics Seminar, Oct 25, 2004.
7. "Particle acceleration by shocks: implications for solar-energetic particles" (part a ~40-member workshop on the Solar dynamics and its effect on Earth) International Space Science Institute, Bern, Switzerland, April, 21, 2005.
8. "Theory and Simulations of impulsive solar-energetic particle transport in the inner heliosphere" Seminar on "Solar Sources of Impulsive Solar-Energetic Particles", at UC Berkeley's Space Science Lab, Nov. 3, 2006.
9. "Cosmic Ray Transport and Interaction with Shocks" (part a ~40-member workshop titled "Cosmic Rays in the Heliosphere 2") held at the International Space Science Institute, Bern Switzerland, April 12-16, 2010.
10. "Hybrid Simulations of Particle Acceleration at Shocks" (part a ~40-member workshop titled "Particle Acceleration in Cosmic Plasmas") held at the International Space Science Institute, Bern Switzerland, May 16-20, 2011.
11. "Particle Acceleration at Astrophysics Shocks: Outstanding Issues", at the Mesoscale Plasma Dynamics and Energetic Particles workshop held in Los Alamos, NM, June 30, 2014.
12. "Voyager and IBEX observe the Turbulent Local Interstellar Magnetic Field", Imperial College Space Physics seminar, London UK, Oct. 13, 2015.
13. "Why are there so few solar proton events this solar cycle?", Imperial College Space Physics seminar, London UK, Nov. 3, 2016.
14. "Voyager and IBEX observe the Turbulent Local Interstellar Magnetic Field", Los Alamos National Laboratory Space Sciences Seminar, Los Alamos, NM, Sep. 9, 2016.
15. "Voyager and IBEX observe the Turbulent Local Interstellar Magnetic Field", UC Berkeley Space Physics Seminar, Berkeley, CA, Sep. 12, 2017.
16. "Why were there so few Large Solar Proton Events in the Last Solar Cycle?", Raytheon TIG talk, Jun. 3, 2020.
17. "What Does the Dearth of Large Solar Energetic Particle Events in Solar Cycle 24 Tell us about Particle Acceleration in the Heliosphere?", NOAA/SPC, virtual presentation, Jun. 25, 2020.

## *Conferences*

1. "Charged-particle acceleration in the outer heliosphere" American Geophysical Union Fall Meeting, 1994.
2. "Cosmic-ray transport coefficients" American Geophysical Union Fall Meeting, 1997.
3. "Particle Transport and Acceleration at Co-rotating Interaction Regions" COSPAR Assembly, Nagoya, Japan 1998.
4. "Particle transport, composition, and acceleration at shocks in the inner heliosphere" ACE-2000 Meeting, Indian Wells, CA, 2000.
5. "The latitudinal heliospheric magnetic field: stochastic and causal components" COSPAR, Warsaw, Poland, 2000.
6. "The injection problem" COSPAR Colloquium, Potsdam, Germany, 2000.
7. "The heliospheric magnetic field" COSPAR Colloquium, Beijing, China, 2001.
8. "Cosmic-Ray Transport Coefficients" Particle Transport and Acceleration in Cosmic Plasmas, Lake Arrowhead (UC Riverside), CA, 2002.
9. "Diffusive Compression Acceleration" Hunstville Workshop "Astrophysical Particle Acceleration", Chattanooga, TN, 2002.
10. "The Transport of Energetic Particles in the Heliospheric Magnetic Field" American Geophysical Union Fall Meeting, 2002.
11. "Cross-Field Diffusion of Energetic Particles in Interplanetary Space" UCR/IGPP Conference, Palm Springs, Feb., 2003.
12. "The Structure of the Termination Shock" NCP/CSSP "Exploring the Outer Heliosphere", Irvine, May, 2003.
13. "Magnetic Footpoint Diffusion at the Sun and the Heliospheric Magnetic Field" SHINE workshop, Maui, HI, July, 2003
14. "Diffusion Shock Acceleration and Mass to Charge" Invited working-group talk given at the Joint ACE/RHESSI/WIND workshop, Taos, NM, October, 2003.
15. "The Physics of Shock Acceleration" Invited Plenary talk given at the Joint ACE/RHESSI/WIND workshop, Taos, NM, October, 2003
16. "The role of field-line meandering in particle acceleration at shocks" 3rd UC Riverside/IGPP conference, "The physics of the outer heliosphere", Riverside, CA, Feb. 11, 2004.
17. "What is the injection energy associated with shock acceleration" SHINE workshop, Big Sky, MT, June 29, 2004.
18. "Numerical simulations of charged-particle transport in the turbulent heliospheric magnetic field" 35th COSPAR General Assembly, Paris, France, July 21, 2004.
19. "Particle Acceleration at shocks moving through irregular magnetic fields" APS Division of Plasma Physics meeting, Savannah, GA, Nov. 15, 2004.
20. "High-Energy Solar Particle Events: Constraints on Diffusive Shock Acceleration Theory" Fall AGU meeting, San Francisco, Dec. 16, 2004.
21. "Numerical simulations of particle acceleration at shocks" 4th UC Riverside/IGPP conference, "The physics of collisionless shocks" Palm Springs, CA, Mar. 2, 2005.
22. "Diffusive shock acceleration of high-energy cosmic rays" Workshop in astrophysics "The Physics at the end of the galactic cosmic-ray spectrum", Aspen, CO., April 28, 2005.

23. "Particle acceleration in the sun and heliosphere" Tutorial/plenary talk given at Solar Wind 11, Whistler, CA, June 13, 2005.
24. "The acceleration of SEPs by shock waves" Invited plenary talk at "Solar and Space Physics and the Vision for Space Exploration", Wintergreen, VA, Oct. 17, 2005.
25. "Temporal and Spatial Variability in Shock Acceleration" 5th UC Riverside/IGPP conference, "The Physics of the Inner Heliosheath, Voyager Observations, Theory, and Future Prospects", Honolulu, HI, March 7, 2006.
26. "Hybrid Simulations of Space Plasmas" UC Riverside/IGPP-Calspace conference on "Numerical Modeling of Space-Plasma Flows", Palm Springs, March 29, 2006
27. "Diffusive Shock Acceleration of High-Energy Cosmic Rays" American Physical Society April Meeting, Dallas, TX, April, 24 2006.
28. "Adiabatic Compression Acceleration of Electrons by Shocks" SHINE workshop, Zermatt Resort, UT, Aug 3, 2006
29. "Theory and Simulations of Particle Acceleration by Astrophysical Shocks" APS Division of Plasma Physics Meeting, Philadelphia, PH, Oct. 31, 2006.
30. "What will Solar Sentinels and STEREO tell us about Particle Acceleration at Coronal Mass Ejections?" AGU Fall Meeting, Dec. 2006.
31. "The Role of Turbulence in Diffusive Shock Acceleration" 6th UC Riverside/IGPP conference "Turbulence and nonlinear processes in astrophysical plasmas" Honolulu, HI, March, 2007.
32. "Magnetic Field Amplification and Cosmic-Ray Acceleration in Turbulent MHD shocks" at the Aspen Workshop on Cosmic Ray Physics, Aspen, CO, April 18, 2007.
33. "Reconciling Observed Spectra in Observed SEP Events With Diffusive Shock Acceleration" The Role of Turbulence" 2007 SHINE workshop held in Whistler, CA, July 31 2007.
34. "Particle Acceleration at Shocks in the Limit of Weak Scattering" 7th UC Riverside/IGPP conference titled "Particle acceleration and transport in the heliosphere and beyond" held in Kauai, HI, March 11, 2008.
35. "Energetic Charged Particles Near the Termination Shock: Theoretical Issues" 2008 spring AGU meeting held in Ft. Lauderdale, May 27, 2008.
36. "Injection Problem in Shock Acceleration" at the conference "Kinetic Modeling of Astrophysical Plasmas" held in Krakow, Poland, Oct. 6, 2008.
37. "Particle acceleration at shocks moving through turbulent plasmas" at the 2008 Huntsville workshop titled "The physical processes for energy and plasma transport Across magnetic boundaries" in Huntsville, AL, Oct 28, 2008.
38. "The Acceleration of Charged Particles at the Termination Shock" at the 2008 Fall AGU meeting in San Francisco, CA, Dec. 15, 2008.
39. "The Structure of the Solar Wind Termination Shock" at the 12th Solar Wind conference in St. Malo, France, June 25, 2009.
40. "Particle Acceleration at Shocks: The Role of Turbulence, Magnetic Field, and Morphology" at the Kavli Institute for Theoretical Physics workshop "Non-linear processes in astrophysical plasmas: particle acceleration, magnetic-field amplification, and radiation signatures" at the KITP at the UC Santa Barbara campus, Sep. 28, 2009.

41. "The Acceleration of Inner-Source Pickup Ions at an Interplanetary Shock" at the 9th Astrophysics Conference (organized by the University of Alabama at Huntsville) held in Maui, HI, March 15, 2010.
42. "Particle Acceleration at Collisionless Shocks: The Role of Turbulence, Field-Line Meandering, and Shock Morphology", at the conference "Numerical Modeling of Space Plasma Flows" held in San Diego, CA, June 14, 2010.
43. "The Interaction of the Solar Wind with a Lunar Magnetic Anomaly", at the 2010 Huntsville workshop titled "Partially Ionized Plasmas throughout the Cosmos" held in Nashville, TN, Oct. 3, 2010.
44. "Is There an Injection Problem in Particle Acceleration at Shocks" at the 10th Astrophysics conference (organized by the University of Alabama at Huntsville) held in Maui, HI, March 15, 2011. (this talk was given by J. R. Jokipii as I had to cancel at last minute for personal reasons)
45. "The Physics of SEP Acceleration in the Inner Heliosphere" at the 4th Solar Orbiter workshop held in Telluride, CO, March 28, 2011.
46. "Heliospheric Phenomena Responsible for Cosmic-Ray Modulation at the Earth" presented at the NAS workshop "The Effects of Solar Variability on Earth's Climate: A Workshop", Boulder, CO, Sep. 8, 2011.
47. "Energetic particles as Probes of the Solar Wind and IMF", Presented at the Structure in the Solar Wind Plasma Workshop, Ann Arbor, MI, Oct. 20, 2011.
48. "Cosmic Rays During the Most-Recent Sunspot Minimum", Fall AGU, San Francisco, Tuesday Dec. 6, 2011
49. "The Transport of SEPs from Impulsive Solar Flares in the Inner Heliosphere", Fall AGU, San Francisco, Wednesday Dec. 7, 2011.
50. "An Analysis of Solar-Energetic Particle Events Associated with Strong Interplanetary Shocks" 11th Astrophysics Conference on Space Weather and the Space Radiation Environment, Palm Springs, CA, March 20, 2012.
51. "Particle Acceleration at Astrophysical Shocks: Are Self-Excited Magnetic Fluctuations Important?" American Physical Society April Meeting, Atlanta, GA, April 1, 2012
52. "Particle Acceleration at CIRs: A Theoretical Perspective" 2012 SHINE Workshop, Maui, HI, June 26, 2012.
53. "Physical Processes that Disperse Solar Energetic Particles in Space and Their Relation to Multi-Point Measurements", Fall AGU, San Francisco, Dec. 4, 2012.
54. "Theoretical Aspects of Solar Energetic Particle Acceleration and Transport", The First Solar Probe Plus Workshop, Pasadena, CA, March 27, 2013.
55. "The Formation of Suprathermal Particles by Acceleration of Thermal Plasma at Shocks", 12<sup>th</sup> Astrophysics Conference, Myrtle Beach, SC, April 18, 2013.
56. "The Evolution of Large, Shock-Associated SEP Events", Solar Probe Plus SWG meeting, Applied Physics Laboratory, Laurel MD, Sep. 16, 2013.
57. "The Acceleration of SEPs at Shocks During Periods of Weak Solar Activity", 2013 Fall AGU meeting, San Francisco, Dec. 10, 2013.
58. "Solar Energetic Particles: Theory, Observations, and coupling SEP transport to MHD/CME models", LWS Heliophysics Science Technical Interchange Meeting, NASA/Ames May 21, 2014.

59. "Diffusive Shock Acceleration Applied to Strong/Fast Interplanetary Shocks: Implications for Large SEP events", 2014 Shine Workshop, Telluride, CO, June 24, 2014.
60. "The acceleration of charged particles from thermal to suprathermal energies at strong shocks in the solar wind", 2014 Fall AGU meeting, San Francisco, Dec. 16, 2014
61. "The Acceleration of Charged Particles by Perpendicular Shocks", Accelerating Cosmic Ray Comprehension Conference, Princeton, April 14 2015
62. "Hybrid Simulations of particle acceleration at an interplanetary shock: implications for the injection problem", Solar Probe Plus / Solar Orbiter workshop, Artimino, Italy, Sep. 3, 2015.
63. "The Injection Problem in Particle Acceleration at Shocks", The Glenn Mason Symposium, Johns Hopkins Applied Physics Lab., March 8, 2016.
64. "Hybrid simulation of particle acceleration at an interplanetary shock", 14<sup>th</sup> Astrophysics Conference, Tampa Bay, FL, April 21, 2015
65. "The origin of suprathermal particles: The role of solar wind plasma compressions", Solar Probe Plus Science Working Group meeting, Smithsonian Castle, Washington DC., Sep 14, 2016.
66. "A New Model for the IBEX Ribbon", 15<sup>th</sup> Astrophysics Conference, Cape Coral, FL, April 5 2016.
67. "Particle Acceleration at a Spherical Shock Propagating into an Irregular Magnetic Field" Astronom 2016, Monterey, CA, June 9, 2016.
68. "The origin of suprathermal particles: The role of solar wind plasma compressions", Solar Probe Plus Science Working Group meeting, Smithsonian Castle, Washington DC., Sep 14, 2016.
69. "The Acceleration of Solar Wind Protons and Minor Ions at Strong, Quasi-Parallel Interplanetary Shocks," 16<sup>th</sup> Astrophysics Conference, Santa Fe, NM, March 8, 2017.
70. "Why are there so Few Solar Proton Events in Solar Cycle 24?" presented at the conference SEPs, Solar Modulation, and Space Radiation: New Opportunities in the AMS-02 Era #2, Washington, DC, April 26, 2017.
71. "Why are there so Few Solar Proton Events in Solar Cycle 24?" presented at the joint Parker Solar Probe and Solar Orbiter Workshop, Johns Hopkins Applied Physics Laboratory, Oct. 4, 2017.
72. "Particle Acceleration at Astrophysical Shocks: Lessons from the Heliosphere", presented at the 2017 JSI Workshop: Cosmic Accelerators Understanding Natures High-Energy Particles and Radiation, Annapolis, MD, Nov. 8, 2017.
73. "Diffusive Shock Acceleration of Suprathermal Protons at Strong Interplanetary Shocks and Comparison with Observations", 17<sup>th</sup> Astrophysics Conference, Santa Fe, NM, March 5., 2018.



74. "Pitch-Angle Scattering in an Irregular Magnetic Field with Constant Magnitude: Implications for the "IBEX Ribbon", ASTRONUM 2018, Panama City, Florida, June 26, 2018.
75. "Energetic Particle Transport and Acceleration at Interplanetary Shocks", 42<sup>nd</sup> COSPAR Assembly, Pasadena, CA, July 16, 2018.
76. "The Role of Turbulence in Particle Acceleration and Transport at Interplanetary Shocks", Scene-setting talk for the focused session "The role of turbulence in the dynamics of SEPs", at the 2018 SHINE conference, Cocoa Beach, Florida, July 31, 2018.
77. "Galactic Cosmic Ray Transport in the Heliosphere: Diffusion Coefficients", Scene-setting talk for the focused session "Galactic Cosmic Ray Transport in the Heliosphere", at the 2018 SHINE conference, Cocoa Beach, Florida, Aug. 2, 2018.
78. "The Role of the Magnetic Field in Cosmic-Ray Transport and Interaction with Shocks", 18<sup>th</sup> Astrophysics Conference, Pasadena, CA, Feb. 20, 2019.
79. "The Interaction of a Two-Component Solar Wind with a Shock: Implications for Particle Acceleration", ASTRONUM 2019, Paris, France, July 2, 2019.
80. "What Determines the Spectrum and Intensity of ESP Events? A Theoretical Perspective", 2019 SHINE workshop, Boulder, CO, Aug. 8, 2019.
81. "Advantages of Observing Solar Energetic Particles and Cosmic Rays from Multiple Vantage Points at 1AU", L5 Consortium Meeting, Stanford University, Palo Alto, CA, Oct. 3, 2019.
82. "Solar Energetic Particles Produced by a Slow CME at 0.25AU: PSP/ISOIS Observations and Modeling", 2019 Arcetri Workshop, Florence, Italy, Oct. 28, 2019.
83. "Acceleration of the Secondary Proton-Beam Component of the Solar Wind: Implications for Particle Acceleration", 19h Astrophysics Conference, Santa Fe, NM, Mar. 9, 2020.
84. "Anomalous Cosmic Rays", ISSI Remote Workshop *The Heliosphere in the Local Interstellar Medium 2.0* Feb. 23, 2021.