Papers and Presentations Supported by the Work Package Heating of the Magnetically Closed Corona[1]

Papers

1. *"Non-thermal Motions and Atmospheric Heating of Cool Stars," Airapetian, V. S., et al. 2023, ApJ, in press*

2. *"Reconstructing the XUV Spectra of Active Sun-like Stars Using Solar Scaling Relations with Magnetic Flux," Airapetian, V. S., et al. 2023, ApJ, 945, 147*

3. "Progress and Challenges in Understanding the Ambient Solar Magnetic Field, Heating, and Spectral Irradiance (COSPAR Space Weather Roadmap 2022 – Cluster S2 Review)," Arge, C. N., Klimchuk, J. A., Schonfeld, S. J., et al. 2023, Adv. Space Research, submitted

4. "Static and Dynamic Solar Coronal Loops with Cross-Sectional Area Variations," Cargill, P. J., Bradshaw, S. J., Klimchuk, J. A., & Barnes, W. T. 2022, MNRAS, 509, 4420

5. *"Solar Irradiance Variability for the Galileo Solar Space Telescope Mission: Concept and Challenges," Carlesso, F., Rogriguez Gomez, J. M., Barbosa, A., Vieira, L., & Dal Lago, A. 2022, Front. Phys., 10:869738*

6. "Impact of 3D Structure on Magnetic Reconnection," Daldorff, L. K. S., Leake, J. E., & Klimchuk, J. A. 2022, ApJ, 927, 196

7. "(When) Can Wave Heating Balance Optically Thin Radiative Losses in the Corona?", De Moortel, I., & Howson, T. A. 2022, ApJ, in press

8. "Probing the Physics of the Solar Atmosphere with the Multi-Slit Solar Explorer (MUSE): I. Coronal Heating," De Pontieu, B., De Moortel, I. et al. 2022, ApJ, 926, 52

9. "Forward Modelling of Heating within a Coronal Arcade," Fyfe, L. E. , Howson, T. A., De Moortel, I. 2021, A&A, 656, A120

10. "The Effects of Driving Time Scales on Coronal Heating in a Stratified Atmosphere," Howson, T. A., & De Moortel, I. 2022, A&A, 661, A144

11. "Observational Signatures of Coronal Heating in MHD Simulations Without Radiation or a Lower Atmosphere," Klimchuk, J. A., Knizhnik, K. K., & Uritsky, V. M. 2023, ApJ, 942, 10

[1] Entries for affiliate team members (not on the original proposal) are italicized

12. “The Thickness of Electric Current Sheets,” Klimchuk, J. A., Leake, J. E., Daldorff, L. K. S., & Johnston, C. D. 2023, Frontiers of Physics, submitted

13. “The Location and Angle Distribution of Magnetic Reconnection in the Solar Corona,” Knizhnik, K. J., & Cabral-Pelletier, L. C. 2022, ApJ, 973, 93

14. “Quasi-periodic Energy Release and Jets at the Base of Solar Coronal Plumes,” Kumar, P., Karpen, J., Uritsky, V., DeForest, C., Raouafi, N., & DeVore, C. R. 2022, ApJ, 933, 21

15. “The Effect of Nanoflare Flows on EUV Spectral Lines,” Lopez Fuentes, M., & Klimchuk, J. A. 2022, ApJ, 939, 17

16. “The Coronal Veil,” Malanushenko, A., Rempel, M., Cheung, M., DeForest, C., & Klimchuk, J. 2022, ApJ, 927, 1

17. “Role of Small-Scale Impulsive Events in Heating the X-ray Bright Points of the Quiet Sun,” Mondal, B., Klimchuk, J. A., et al. 2023, ApJ, 945, 37

18. “Data-Constrained Solar Modeling with GX Simulator,” Nita, G. M., Schonfeld, S. J., Klimchuk, J. A., et al. 2023, ApJ, in press

19. “Flows in Enthalpy Based Thermal Evolution of Loops,” Rajhans, A., Tripathi, D., Bradshaw, S. J., Kashyap, V. L., & Klimchuk, J. A. 2022, ApJ, 924, 13

20. “Center to Limb Variation of Transition Region Doppler Shift in Active Regions,” Rajhans, A., Tripathi, A., Kashyap, V. L., & Klimchuk, J. A. 2023, ApJ, in press

21. “Magnetic Reconnection as the Driver of the Solar Wind,” Raouafi, N. E., Uritsky, V. M., Karpen, J. T., et al. 2023, ApJ, 945, 28

22. “Contribution of Spicules to Solar Coronal Emission,” Sow Mondal, S., Klimchuk, J. A., & Sarkar, A. 2022, ApJ, 937, 71

23. “Universal Scaling Laws for Solar and Stellar Atmospheric Heating: Catalog of Power-law Index Between Solar Activity Proxies and Various Spectral Irradiances,” Toriumi, S., Airapetian, V., Namekata, K., & Notsu, Y. 2022, ApJ Supp., 262, 46

24. “Universal Scaling Laws for Solar/Stellar Atmospheric Heating,” Toriumi, S., & Airapetian, V. 2022, ApJ, 927, 179

25. “Planning the Future Space Weather Operations and Research Infrastructures,” Cohen, C., Viall, N. M., et al. 2022, Proceedings of the Nat. Acad. Sci., Eng., Med.

26. “An Analysis of Spikes in Atmospheric Imaging Assembly (AIA),” Young, P. R., Viall, N. M., Kirk, M. S., Mason, E. I. & Chitta, L. P. 2021, SoPh, 296, 181

27. “Properties of EUV Imaging Spectrometer (EIS) Slot Observations,” Young, P. R., & Ugarte-Urra, I. 2022, SoPh, 297, 87

28. “Scattered Light in the Hinode/EIS and SDO/AIA Instruments Measured from the 2012 Venus Transit,” Young, P. R. & Viall, N. M. 2022, ApJ, 938, 27

Decadal Survey White Papers of Direct Relevance

1. “Cool Multiphase Plasma in Hot Environments,” Antolin, P., Johnston, C. D., Klimchuk, J. A. et al.

2. “Quantifying the Sun’s Magnetic Stress with the Photospheric Flows,” Attie, R., Tremblay, B., Kirk, M., Schuck, P., Pesnell, D., Upton, L., Klimchuk, J., Viall, N., and Thompson, B.

3. “The Case for Comprehensive Spectroscopic Measurements of the Sun: Understanding Solar Flares and Coronal Heating,” Brosius, J., Young, P., Klimchuk, J., Kucera, T., and Daw A.

4. “CLARO Solar Coronal Polarization Diagnostics with H I Ly-alpha,” Cassini, R., Viall, N. M., et al.

5. “The Next Decade of Solar Ultraviolet Spectral Irradiance – Continuity, Modeling, and Physics,” Chamberlin, P., Jones, A., Klimchuk, J., Kopp, G., Mason, J., Thiemann, E., Warren, H., Woods, T.

6. “Major Scientific Challenges and Opportunities in Understanding Magnetic Reconnection and Related Explosive Phenomena in Heliophysics and Beyond,” Ji, H., Karpen, J., Klimchuk, J., et al.

7. “Heating of the Magnetically Closed Corona and Physical Models of Solar and Stellar Spectral Irradiances,” Klimchuk, J., Work Package Team, others

8. “Measuring Nonthermal Properties of Weak Transients in the Quiescent Solar Corona,” Mondal, S., Chen, B., Yu, S., Klimchuk, J., Chhabra, S., Chen, T.

9. “Observing Coronal Microscales and their Connection with Mesoscales,” Rabin, D., Klimchuk, J., Viall, N., De Moortel, I., et al.

10. “Firefly: The Case for a Holistic Understanding of the Global Structure and Dynamics of the Sun and Heliosphere,” Raouafi, N., Viall, N. M., et al.

11. “Fundamentals of Impulsive Energy Release in the Corona,” Shih, A., Klimchuk, J., et al.

12. “Mesoscale Dynamics are the Key to Unlocking the Universal Physics of Multiscale Feedback,” Kepko, L, Viall, N. M., et al.

Presentations[2]

1. "Preliminary Application of EUNIS Soft X-Ray and EUV Imaging Spectroscopy to EIS Radiometric Calibration," Brosius, J., Daw, A., Landi, E., Rabin, D., and Schmit, D. (Hinode-14/IRIS-11 Joint Science Meeting; virtual at George Mason Univ.; 10/25/21)

2. "First Imaging Spectroscopy of 92-115 Angstrom Solar Soft X-rays by EUNIS: Implications for Solar Coronal Heating," Brosius, J., Daw, A., Rabin, D., Landi, E., and Schmit, D. (AGU Fall Meeting; New Orleans; 12/13/21)

3. "Application of EUV and SXR Spectra from the EUNIS Sounding Rocket to Solar Coronal Heating," Brosius, J., Daw, A., Rabin, D., Landi, E. (Goddard UV Symposium; 4/5/22)

4. "Application of EUV and SXR Spectra from the EUNIS Sounding Rocket to Solar Coronal Heating," Brosius, J., Daw, A., Rabin, D., Landi, E. & Schmit, D. (poster; Triennial Earth-Sun Summit; Bellevue, WA; 8/8/22)

5. "Nonthermal Velocities and Other Properties of a Quiescent Active Region Observed by EUNIS and EIS: Implication for Coronal Heating," Brosius, J., Daw, A., Rabin, D., Landi, E. & Schmit, D. (poster discussion session; AGU Fall Meeting; Chicago; 12/13/22)

6. *"Signatures of Type III Solar Radio Bursts from Nanoflares: Modeling," Chhabra, S., Klimchuk, J., & Gary, D. (invited; NASA MSFC Journal Club; 10/15/21)*

7. *"Study of Type III Radio Bursts in the Closed Corona and the Solar Wind from Small-Scale Reconnection: Observations (highlighted)," Chhabra, S., Klimchuk, J. A., Gary, D. E. (Fall AGU Meeting; New Orleans; 12/14/21)*

8. "Magnetic Reconnection in 3D vs. 2D and Dependence on Magnetic Shear," Daldorff, L., Leake, J., & Klimchuk, J. (Fall AGU Meeting; New Orleans; 12/14/21)

9. "Implication of Line Tied Magnetic Field on Magnetic Reconnection in the Closed Corona" Daldorff, L., Leake, J., & Klimchuk, J. (Magnetic Reconnection 2022; Monterey, CA; 5/16/22)

10. "Magnetic Reconnection in 3D vs. 2D and Dependence on Magnetic Shear," Daldorff, L., Leake, J., & Klimchuk, J. (10th Coronal Loops Workshop; Paris; June 28 – July 1, 2022)

11. "Magnetic Reconnection in 3D vs. 2D and Dependence on Magnetic Shear," Daldorff, L., Leake, J., & Klimchuk, J. (Triennial Earth-Sun Summit; Bellevue, WA; 8/9/22)

12. "Implication of Line Tied Magnetic Field on Magnetic Reconnection in the Closed Corona" Daldorff, L., Leake, J., & Klimchuk, J. (LWS team meeting; Huntsville, AL; 10/14/22)

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[2] only those with team members as first author; many other presentations are not included

13. “Implication of Line Tied Magnetic Field on Magnetic Reconnection in the Closed Corona” Daldorff, L., Leake, J., & Klimchuk, J. (AGU Fall Meeting; Chicago; 12/15/22)

14. "Hot Spectroscopy: Co-ordinated EUNIS-2021, IRIS, and Hinode Observations of AR 12824," Daw, A., Schmit, D., Rabin, D., Brosius, J., and Landi, E. (Hinode-14/IRIS-11 Joint Science Meeting; virtual at George Mason Univ.; 10/25/21)

15. “Aspects of MHD Wave Heating in the Complex Solar Atmosphere,” De Moortel, I. (seminar; Manchester Univ.; 2/16/22)

16. “Aspects of MHD Wave Heating in the Complex Solar Atmosphere,” De Moortel, I. (seminar; Leeds Univ.; 3/10/22)

17. “(When) Can Wave Heating Balance Optically Thin Radiative Losses in the Corona?”, De Moortel, I. (10th Coronal Loops Workshop; Paris; 6/29/22)

18. “A Fast and Accurate Method to Capture the Solar Corona/Transition Region Enthalpy Exchange in Multi-Dimensional Magnetohydrodynamic Simulations,” Johnston, C., De Moortel, I., Daldorff, L, Leake, J., Klimchuk, J., et al. (AGU Fall Meeting; New Orleans; 12/13/21)

19. “Multi-Dimensional Modeling of the Transition Region and Application to Thermal Non-Equilibrium,” Johnston, C. D. (Invited; Workshop on What Solar Observations Can Teach us about Multiphase Plasmas across Astrophysical Scales; Orléans, France; 6/15/22)

20. “A Fast Multi-Dimensional MHD Formulation of the Transition Region Adaptive Conductive (TRAC) Method,” Johnston, C. D., Hood, A. W., De Moortel, I., & Daldorff, L. K. S. (10th Coronal Loops Workshop; Paris; 6/28/22)

21. “A Fast and Accurate Method to Capture the Solar Corona/Transition Region Enthalpy Exchange in Multi-Dimensional Magnetohydrodynamic Simulations,” Johnston, C. D., Hood, A. W., De Moortel, I., & Daldorff, L. K. S. (Triennial Earth-Sun Summit; Bellevue, WA; 8/8/22)

22. “A Fast Multi-Dimensional MHD Formulation of the Transition Region Adaptive Conduction (TRAC) Method," Johnston, C. D., Hood, A. W., De Moortel, I & Daldorff, L. K. S. (Invited; 2022 Solar MHD Meeting; Eastbourne, UK; 8/9/22)

23. “Transition Region Adaptive Conduction (TRAC) Method: Application in Impulsive Heating and TNE Simulations,” Johnston, C. D., Barnes, W. T., Daldorff, L. K. S., & Daley-Yates, S. (invited; ISSI, Bern, Switzerland, 3/13/23)

24. “Coronal Heating,” Klimchuk, J. A. (invited seminar; PMOD/WRC, Davos, Switzerland; 12/7/21)

25. “Coronal Heating: A Coupled Multi-Scale Problem,” Klimchuk, J. A. (**honorary Parker Lecture**; Fall AGU Meeting; New Orleans; 12/13/21)

26. “Computing Emission Signatures from Coronal MHD Models Without a Realistic Atmosphere,” Klimchuk, J. A., Knizhnik, K., & Uritsky, V. (Fall AGU Meeting; New Orleans; 12/16/21)

27. “Heating of the Magnetically Closed Corona,” Klimchuk, J., Daldorff, L., Brosius, J., & Johnston, C. (HISFM Showcase, 4/7/22)

28. “The Role of 3D Complexity in Magnetic Reconnection,” Klimchuk, J., Daldorff, L., & Leake, J. (invited; given by L. Daldorff as Klimchuk could not attend for medical reasons; Magnetic Reconnection 2022; Monterey, CA; 5/20/22)

29. “Alfven Waves From Interchange Reconnection at Streamer-Coronal Hole Boundaries,” Klimchuk, J. (invited; Viall Work Package Team Meeting; GSFC; 6/3/22)

30. “Cross Sections of Coronal Loop Flux Tubes,” Klimchuk, J., & DeForest, C. (10th Coronal Loops Workshop; Paris; 6/30/22)

31. “Observational Signatures of Coronal Heating in MHD Simulations Without Radiation or a Lower Atmosphere,” Klimchuk, J., Knizhnik, K., & Uritsky, V. (poster; 10th Coronal Loops Workshop; Paris; 6/28/22)

32. “Coronal Heating: A Coupled Multi-Scale Problem,” Klimchuk, J. (invited colloquium; Institut d’Astrophysique Spatiale, Paris; 7/4/22)

33. “Investigations of Coronal Heating at GSFC,” Klimchuk, J. (Solar Lab meeting; GSFC; 7/14/22)

34. “Observational Signatures of Coronal Heating in MHD Simulations Without Radiation or a Lower Atmosphere,” Klimchuk, J., Knizhnik, K., & Uritsky, V. (Triennial Earth-Sun Summit; Bellevue, WA; 8/8/22)

35. “Cross Sections of Coronal Loop Flux Tubes,” Klimchuk, J., & DeForest, C. (poster; Triennial Earth-Sun Summit; Bellevue, WA; 8/8/22)

36. “Magnetospheric Nanoflares?”, Klimchuk, J. (LWS team meeting; Huntsville, AL; 10/12/22)

37. “The Role of 3D Complexity in Magnetic Reconnection,” Klimchuk, J., Daldorff, L., & Leake, J. (LWS team meeting; Huntsville, AL; 10/14/22)

38. “Coronal Heating: Globally and Within Campfires,” Klimchuk, J. (invited; Solar Orbiter “Atmospheric Heating” Science Working Group; virtual; 10/17/22)

39. “The Role of 3D Complexity in Magnetic Reconnection,” Klimchuk, J., Daldorff, L., & Leake, J. (AGU Fall Meeting; Chicago; 12/12/22)

40. “Cross Sections of Coronal Loop Flux Tubes,” Klimchuk, J., & DeForest, C. (poster; GSFC Poster Party; 1/26/23)

41. “The Difference Between Thermal Non-equilibrium and Thermal Instability,” (ISSI; Bern, Switzerland; 3/13/23)

42. “Condensation Formation with Nanoflare Heating,” Klimchuk, J., Kucera, T., & Luna, M. (ISSI; Bern, Switzerland; 3/16/23)

43. “The Unavoidable Thinning of Current Sheets,” Klimchuk, J., Leake, J., Daldorff, L., & Johnston, C., (work package team meeting; GSFC; 4/5/23)

44. “Modeling of Condensations in Active Region Loops Produced by Nanoflares,” Kucera, T., Klimchuk, J., & Luna, M. (Solar Orbiter Science Meeting; Belfast; Sept 12-15, 2022)

45. “Simulations of Thermal Non-Equilibrium Caused by Nanoflares,” Kucera, T., Klimchuk, J., & Luna, M. (10^{th} Coronal Loops Workshop; Paris; June 28 – July 1, 2022)

46. “Simulations of Thermal Non-Equilibrium Caused by Nanoflares,” Kucera, T., Klimchuk, J., & Luna, M. (poster; Triennial Earth-Sun Summit; Bellevue, WA; 8/8/22)

47. “The Role of UV in Heliophysics,” Kucera, T. (keynote; Goddard UV Symp.; Greenbelt, MD; 4/4/22)

48. “Onset of Magnetic Reconnection in the Solar Corona,” Leake, J., Klimchuk, J., & Daldorff, L. (Fall AGU Meeting; New Orleans; 12/15/21)

49. “The Onset of Magnetic Reconnection in Dynamically Evolving Coronal Current Sheets,” Leake, J., Daldorff, L., & Klimchuk, J. (Triennial Earth-Sun Summit; Bellevue, WA; 8/9/22)

50. “Coronal Microscale Observatory (CMO),” Rabin, D., Viall, N. M., Klimchuk, J. A., et al. (UV Science at Goddard Workshop; Greenbelt)

51. *“A Study of Small-Scale Brightenings using EUV Data from SPICE onboard Solar Orbiter,” Rodriguez Gomez, J. M., Young, P., & Kucera, T. (EGU General Assembly 2022; Vienna; 5/23/22)*

52. *“Modeling EUV Intensity at the Top of the Transition Region Using SPICE Data Onboard Solar Orbiter,” Rodriguez Gomez, J. M., Kucera, T., Young, P., and the SPICE Team (SPICE Consortium Meeting and STW 36; Sorbonne University; Paris; 4/19/23*

53. *"Plasma Properties of Quiet Sun Small-scale Solar Dynamic Features in the Transition Region," Rodriguez Gomez, J. M., Kucera, T., Young, P., and the SPICE Team (EGU General Assembly; 4/23/23)*

54. *"Modeling EUV Intensity at the Top of the Transition Region Using SPICE Data Onboard Solar Orbiter," Rodriguez Gomez, J. M., Kucera, T., Young, P., and the SPICE Team (EGU General Assembly; 4/23/23*

55. "Answering the Outstanding Questions of Solar Wind Physics," Viall, N. M. (invited; St. Andrews University; 3/16/22)

56. "Outstanding Questions of Coronal Heating and Solar Wind Physics," Viall, N. M. (invited; Triennial Earth-Sun Summit; Bellevue, WA; 8/8/22)

57. "The Grand Challenge Questions of Solar Wind Physics," Viall, N. M. (invited; Eddington Lecture, Inst. Astronomy, U. Cambridge, 3/9/23)

58. "The Grand Challenge Questions of Solar Wind Physics," Viall, N. M. (invited; Eddington Lecture, Inst. Astronomy, U. Cambridge, 3/9/23)

59. "The Grand Challenge Questions of Solar Wind Physics," Viall, N. M. (invited; Royal Astron. Soc., London, 3/10/23)

60. "CHIANTI: An Atomic Database and Software Package for UV Spectroscopy," Young, P. (Goddard UV Symposium; 4/4/22)

61. "An Analysis of Spikes in Atmospheric Imaging Assembly (AIA) Data," Young, P., Viall, N. M., et al. (Triennial Earth-Sun Summit; Bellevue, WA; 8/8/22)