Dr. William H. Ashfield IV

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Appointments

2022-Present *Postdoctoral Research Scientist* Bay Area Environmental Research Institute/ Lockheed Martin Solar & Astrophysics Laboratory

2019-2022 *Graduate Research Assistant*, Montana State University Physics Dept.
Advisor: Dana Longcope

2018-2019 *Graduate Teaching Assistant*, Montana State University Physics Dept.

Education

2022 PH.D. | Physics | Montana State University

2021 M.S. | Physics | Montana State University

2017 B.A. | Physics | Reed College

Areas of Specialisation

Solar Flares - Chromospheric Diagnostics
UV and Hard X-ray Spectroscopy
Data Analysis and Numerical Modeling

Research Experience

Present Investigating the temporal and spatial evolution of turbulence through Fe XXI 1354.1 Å spectral line broadening

2021-2022 Modeling the effects of Alfvén wave-induced turbulence on flare heating, chromospheric condensation, and long-duration coronal EUV emission

2020-2021 Forward modeling of IRIS observations using synthetic Si IV 1402.77 Å emission spectra created from data-driven simulations

2019-2020 Modeling of downflows seen in the solar atmosphere during flares using one-dimensional hydrodynamic simulations of coronal loops

2016-2017 Undergraduate Thesis, *Reduced Simulations: A technique for $\gamma - \gamma$ angular correlation analysis*. Developed an novel analysis technique to reduce the amount of time necessary to extract angular correlation coefficients from nuclear decay measurements using the GRIFFIN spectrometer at the TRIUMF facility in Vancouver, Canada. Read it here.

Publications & Conference Proceedings

Refereed articles

2022 **W. Ashfield IV** & D.W. Longcope, "A Model for Gradual Phase Heating Driven by MHD Turbulence in Solar Flares", *ApJ*
https://doi.org/10.3847/1538-4357/acb1b2

2022 **William Ashfield IV**, Dana W. Longcope, Chunming Zhu, and Jiong Qiu, "Connecting Chromospheric Condensation Signatures to Reconnection Driven Heating Rates in an Observed Flare", *ApJ*
https://doi.org/10.3847/1538-4357/ac402d

2021 **W. H. Ashfield** & D.W. Longcope "Relating the Properties of Chromospheric Condensation to Flare Energy Transported by Thermal Conduction", *ApJ*
https://doi.org/10.3847/1538-4357/abedb4

2019 J. K. Smith, A. D. MacLean, **W. Ashfield**, A. Chester, A. B. Garnsworthy, C. E. Svensson, "Gamma-gamma angular correlation analysis techniques with the GRIFFIN spectrometer", *NIM A*
https://doi.org/10.1016/j.nima.2018.10.097

2019 A. B. Garnsworthy, C. E. Svensson, M. Bowry, R. Dunlop, A. D. MacLean, B. Olaizola, J. K. Smith, F. A. Ali, C. Andreoiu, J. E. Ash, **W. H. Ashfield**, G. C. Balle, et. al., "The GRIFFIN Facility for Decay-Spectroscopy Studies at TRIUMF-ISAC", *NIM A*
https://doi.org/10.1016/j.nima.2018.11.115

Invited Presentations

2022 William Ashfield, Dana Longcope, Chunming Zhu, and Jiong Qiu "Connecting Chromospheric Condensation Signatures to Reconnection Driven Heating rates in an X1.0 Flare", Hinode-15 / IRIS-12, Prague, Czech Republic

Contributed Presentations

2023 William Ashfield, Dana Longcope "A Model for Gradual Phase Heating Driven by MHD Turbulence in Solar Flares", RoCMI Workshop, Longyearbyen, Svalbard, Norway

2022 William Ashfield, Dana Longcope "A Model for Gradual Phase Heating Driven by MHD Turbulence in Solar Flares", AGU Fall Meeting, Chicago, Illinois

2022 William Ashfield, Dana Longcope "A Model for Gradual Phase Heating Driven by MHD Turbulence in Solar Flares", TESS/SPD Meeting, Bellevue, Washington

2022 William Ashfield, Dana Longcope "A Model for Gradual Phase Heating Driven by MHD Turbulence in Solar Flares", SHINE Conference, Honolulu, Hawai'i

2021 William Ashfield, Dana Longcope, Chunming Zhu, and Jiong Qiu "Connecting Chromospheric Condensation Signatures to Reconnection Driven Heating rates in an X1.0 Flare", AGU Fall Meeting, New Orleans, Louisiana

2021 William Ashfield, Dana Longcope, Chunming Zhu, and Jiong Qiu "Connecting chromospheric condensation signatures to reconnection driven heating rates in an X1.0 flare", AAS/Solar Physics Division Meeting (Virtual) See it here.

2021 William Ashfield, Dana Longcope, Chunming Zhu, and Jiong Qiu "Connecting chromospheric condensation signatures to reconnection driven heating rates in an X1.0 flare", SolFER Spring Meeting (Virtual) See it here.

2020 William Ashfield and Dana Longcope "Characterizing Chromospheric Condensation from Shocks Driven by Thermal Conduction", AGU Fall Meeting (Virtual)

Conference Activities

2021 Session Co-chair - Solar Flare Onset and Energy Release II Oral, AGU Fall Conference, New Orleans, Louisiana

Invited Talks and Seminars

2022 Stanford Solar Seminar, "Modeling the Effects of Flare Energy Release and Transport through Chromospheric Condensation and Coronal EUV Emission"

2022 Lockheed Martin Solar and Astrophysics Seminar, "Modeling the Effects of Flare Energy Release and Transport through Chromospheric Condensation and Coronal EUV Emission"

2021 National Solar Observatory APS Seminar, "Chromospheric Condensations as a Diagnostic for the Flare Energy Release Process"

Workshops

2023 EOVSA Data and GX Simulator Modeling Camp, NJIT, Newark, NJ

2022 Solar Spectropolarimetry and Diagnostic Techniques School, NSO/HAO, Boulder, CO

2022 Solar Physics High Energy Research (SPHERE) Workshop, SwRI, Boulder, CO

2022 5nd NCSP DKIST Data-Training Workshop, NSO, Virtual

2021 4nd NCSP DKIST Data-Training Workshop, NSO, Virtual

2020 2nd NCSP DKIST Data-Training Workshop, NSO, Cal State Northridge

2020 Heliophysics Summer School, UCAR, CU Boulder

Space-Based Telescope Observing/Planning Experience

2023 Interface Region Imaging Spectrograph (IRIS) - 3 weeks

Software Development

Present PyPREFT - rewriting and expanding the numerical simulation code developed by Longcope and Klimchuk for efficiency and integration with scientific Python.

2017 US Elections Data Visualization App - Assisted Dr. Michael McDonald with the US Elections Project Team in creating automated election demographic visualizations.

Work

2015-2017 *Science Educator*, Oregon Museum for Science and Industry

2015-2017 *Tutor & Grader*, Reed College Dorothy Johansen House for Academic Support Services

2014-2016 *Line Chef* Pok Pok

Updated: May 28, 2023