DR. JARED CARL WORKMAN

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EDUCATION	***2010 Ph.D., Astrophysics*** • University of Colorado Boulder, CO ***2005 M.S., Astrophysics*** *3.94 GPA* • University of Colorado Boulder, CO ***2003 B.S., Physics and Mathematics*** *Summa Cum Laude 3.94 GPA* • Temple University Philadelphia, PA ***2000 B.A., Psychology*** *Summa Cum Laude 3.96 GPA* • Temple University Philadelphia, PA
AWARDS	W.W. Smith Scholarship 1998-2000 Murray Greene Award Presidential Scholars Award 2000 and 2003 Richard Nelson Thomas Award 2010
COMPUTER SKILLS	Operating Systems - Windows, Linux, MacOs Software Packages - Microsoft Office, Mathematica, Maxwell's 3d Simulator, VAPOR, VISIT Programming Languages, Extensive Experience - C, IDL, Fortran, (X)HTML/CSS Programming Languages, Basic Proficiency - JAVA, PHP, MySQL, Python Programming Languages, Familiarity – OpenMP, MPI Extensive experience with OpenMP and MPI parallelized MHD & Fluid grid based codes Extensive Experience with the OSIRIS particle in cell (PIC) code Extensive experience using supercomputing platforms Teragrid, Columbia, & Nersc Extensive experience developing application specific scientific software solvers and analysis routines
RESEARCH EXPERIENCE	***Summer 2010 – Spring 2011 University of Rochester Rochester, NY*** *Research Scientist* Working to jointly model the large scale reconnection dynamics and slow shock launching in solar flares using parallel MHD solver while probing the particle dynamics in the shocks using PIC simulations. Adapted PIC code OSIRIS to include a moving wall boundary condition. Adapting the results of the multi-scale simulations to generate sub grid models for fluid codes based on kinetic codes. ***Spring 2005 – Spring 2010 JILA - Phil Armitage's Group Boulder, CO*** *Research Assistant* Simulated accretion disks, Molecular Cloud/Black Hole mergers and Magnetohydrodynamic (MHD) instabilities using numerous Fortran and C based advanced parallel 3-D grid based codes. Studied MHD turbulence and instabilities, variability in accretion disks due to hydrodynamic turbulence and thermal effects, star formation and Bondi Accretion onto black holes. Semi-Analytically modeled the afterglow spectrum in Gamma Ray Bursts incorporating relativistic effects and varying magnetic field topologies. Published in multiple, peer-reviewed journals. Presented several talks to faculty and students. Oversaw the development, implementation and analysis of multiple, concurrent projects. ***2004 - 2005 SWRI - Solar Physics Group Boulder, CO*** *Research Assistant* Modeled the thermal response of satellite hardware using IDL. Developed image filtering/manipulation routines image and data analysis routines to examine sounding rocket solar images. ***Summer 2000 Physics Department Temple University*** *Research Assistant* Conducted research and performed computer modeling in project to detect a candidate for dark matter. Responsibilities included object modeling using "Maxwell's 3D Simulator" (an AutoCAD like program designed to measure electrical and magnetic field forces), examining naturally

occurring radiation output from a steel containment chamber, and information analysis.

1996 - 2003 *Counselors for Management Inc.* *Abington, PA*

Research Assistant

Worked as an independent contractor assisting in government and industry sponsored projects. Projects involved technical assessment of new and emerging products and processes. Responsibilities included database construction, data analysis, and report creation.

PUBLICATIONS & CONFERENCE PROCEEDINGS

PUBLICATIONS

"Late time afterglow observations reveal a collimated relativistic jet in the ejecta of the binary neutron star merger GW170817", Davide Lazzati, Rosalba Perna, Brian Morsony, Dieggo Lopez-Camara, Matteo Cantiello, Bruno Giacomazzo, and Jared Workman, Accepted Phy Rev Letters, editor's choice.

"Off-axis emission of short γ-ray bursts and the detectability of electromagnetic counterparts of gravitational-wave-detected binary mergers", Davide Lazzati, Alex Deich, Brian Morsony, and Jared Workman, MNRAS, Volume 471, Issue 2, 1652 pp, 2017

"Off-axis Prompt X-Ray Transients from the Cocoon of Short Gamma-Ray Bursts", Davide Lazzati, Diego Lopez-Camara, Matteo Cantiello, Brian Morsony, Rosalba Perna, and Jared Workman, ApjL, Volume 848, Issue 1, 7 pp, 2017

"G2 and Sgr A*: A Cosmic Fizzle At The Galactic Center", Brian Morsony, Brandon Gracey, and Jared Workman, Apj, Volume 843, Issue 1, 19 pp, 2017

"**Modeling The Afterglow of The Possible FERMI-GBM Event Associated with GW150914** ", Brian Morsony, Jared Workman, and Dominic Ryan, ApjL, Volume 825, Issue 2, 2016

"Analytical Models of Exoplanetary Atmospheres: Atmospheric Dynamics via the Shallow Water System", Kevin Heng & Jared Workman, ApjS, Volume 213, Issue 2, Article 27, 35 pp, 2014

"'Modeling Increased Metal Production in Galaxy Clusters with Pair-Instability Supernovae'", Brian Morsony, Caitlin Heath, and Jared Workman, MNRAS, Volume 441, pp 2134-2147, 2014

"Particle-in-cell simulations of particle energization via shock drift acceleration from low Mach number quasi-perpendicular shocks in solar flares", Jaehong Park, Chuang Ren, Jared C. Workman, Eric G. Blackman, ApJ, 765, 147, 2013

"Particle-in-cell simulations of particle energization from low Mach number fast mode shocks", Jaehong Park, Jared C. Workman, Eric Blackman, Chuang Ren, and Robert Siller, Volume 19, 6, 2012

"Simulations Reveal Fast Mode Shocks in Magnetic Reconnection Outflows", Jared C. Workman, Eric Blackman, & Chuang Ren, Physics of Plasmas, Volume 18, 9, 2011

"Jitter radiation, images, spectra, and lightcurves from a relativistic, spherical blastwave", Brian C. Morsony, Jared C. Workman, Davide Lazzati, (JILA, U. Colorado), Mikhail V. Medvedev (U. Kansas) MNRAS, Volume 392, pp 1397-1402, 2009

"Jitter Radiation In Gamma Ray Bursts and their afterglows: Emission and Self

	Absorption", Jared C. Workman, Brian C. Morsony, Davide Lazzati, (JILA, U. Colorado), Mikhail V. Medvedev (U. Kansas) MNRAS, Volume 386, pp. 199-210, 2008 **"Interaction of the magnetorotational instability with hydrodynamic turbulence"**, Jared C. Workman & Philip J. Armitage, The Astrophysical Journal, Volume 685, pp. 406-417, 2008 **"Jitter radiation as a possible mechanism for Gamma-Ray Burst afterglows. Spectra and lightcurves"**, Mikhail V. Medvedev (U. Kansas), Davide Lazzati, Brian C. Morsony, Jared C. Workman (JILA, U. Colorado) The Astrophysical Journal, Volume 666, Issue 1, pp. 339-345, 2007 **CONFERENCE PROCEEDINGS** **"Low Accretion Rate Expected From G2 Gas Cloud"**, Jared Workman, Brian Morsony, and Brandon Gracey, IAU General Assembly XXIX, Honolulu, Hawaii, August 3rd -14th 2015 **"The IMF in galaxy clusters: What is needed to account for high metal production"**, Brian Morsony, Caitlin Heath, and Jared Workman, IAU General Assembly XXIX, Honolulu, Hawaii, August 3rd -14th 2015 **"Accounting for Anomalously High Metal Production in Galaxy Clusters",** Morsony, Brian J.; Heath, C.; Workman, J. C., American Astronomical Society, AAS Meeting #221, #226.06 **"PIC Simulations of particle energization From low Mach number fast mode shocks"**, Jaehong Park, Jared C. Workman, Eric G. Blackman, Chuang Ren, and Robert Siller, 220th Meeting, American Astronomical Society, Anchorage, Alaska, June 10th -14th , 2012 **"The importance of high-mass stars for metal enrichment in galaxy clusters"**, C. A. Heath, B. J. Morsony, and J. C. Workman 220th Meeting, American Astronomical Society, Anchorage, Alaska, June 10th-14th, 2012 **"Fast shocks in magnetic reconnection outflows"**, Jared C. Workman, Eric G. Blackman, and Chuang Ren, Division Plasma Physics, 53rd Annual Meeting, Salt Lake City, November 14th -18th , Utah, 2011 **"PIC simulations of low Mach number perpendicular shocks using the moving wall method and ion shock drift acceleration",** Jaehong Park, Jared C. Workman, Eric G. Blackman, Chuang Ren, and Robert Siller, Division Plasma Physics, 53rd Annual Meeting, Salt Lake City, Utah, November 14th -18th , 2011
TEACHING EXPERIENCE & TEACHING CONFERENCES	**EXPERIENCE** *Fall 2011 - Present Physical & Environmental Sciences Colorado Mesa University* *Associate Professor* Professor of physics and astronomy. *Spring 2010 Science Department Front Range Community College* *Adjunct Faculty* Served as primary instructor in for Astronomy 101 – Planets and our Solar System, at Front Range Community College. *2003 – 2010 Astrophysical Department University of Colorado* *Teaching Assistant* Developed review session, exams, and homework assignments. Created a very efficient database

driven system to record the grades of hundreds of students from multiple sources.

2001 – 2003 *Mathematics Department* *Temple University*

Adjunct Faculty

Served as primary instructor in introductory mathematics courses at Temple University. Increased the proficiency and taught hundreds of students.

2000 – 2002 *Math & Science Resource Center* *Temple University*

Tutor

Tutored math and physics courses, prepared students for tests and ran final review and recitation sessions.

TEACHING CONFERENCES

"AAPT: New Faculty Workshop", College Park, Maryland, November, 2012

"AAPT: Building a Thriving Undergraduate Physics Department", Seattle, Washington February, 2015