

## Adam M. Jacobs

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CONTACT INFORMATION	Research Associate JINA-CEE Postdoctoral Fellow Department of Physics and Astronomy Michigan State University Biomedical and Physical Sciences Building 3255 567 Wilson Road East Lansing, Michigan 48824 USA	<i>E-mail:</i> <a href="mailto:ajacobs@pa.msu.edu">ajacobs@pa.msu.edu</a> <i>WWW:</i> <a href="http://www.amjacobs.net">http://www.amjacobs.net</a>
EDUCATION	<b>Stony Brook University</b> Stony Brook, NY Ph.D. in Physics <i>Thesis: Low-Mach Number Modeling of Thin Helium Shells on Sub-Chandrasekhar Mass White Dwarfs</i> Advisor: Dr. Michael Zingale	August 2016
	<b>Hendrix College</b> Conway, AR B.A. in Physics (with distinction) and Computer Science (with distinction) <i>summa cum laude</i>	May 2009
RESEARCH INTERESTS	<b>Nuclear astrophysics:</b> type Ia supernovae, type I X-ray bursts, nucleosynthesis <b>Computational astrophysics:</b> low Mach hydrodynamics, computational fluid dynamics, 3D multi-physics simulations, nuclear reaction networks, high performance computing, GPGPU and co-processor programming	
EXPERIENCE	<b>Research Associate</b> , Michigan State University Joint Institute for Nuclear Astrophysics - Center for the Evolution of the Elements Postdoctoral Fellow in Theoretical Nuclear Astrophysics Supervisors: Edward Brown, Hendrik Schatz Area of Study: Nuclear and Computational Astrophysics, Type I X-Ray Bursts	August 2016 to present
	<b>Research Assistant</b> , Stony Brook University Nuclear Astrophysics Group Advisor: Dr. Michael Zingale Area of Study: Nuclear and Computational Astrophysics, Type Ia Supernovae	August 2010 to August 2016
	<b>Session Instructor</b> , Stony Brook University WSE 187 Introduction to Research: Computational Science and Engineering	February 2015, 2016
	<b>Teaching Assistant</b> , Stony Brook University PHY 277 Computation for Physics and Astronomy	August 2009 to May 2010
	<b>National Undergraduate Fellow</b> , Princeton Plasma Physics Laboratory <i>The Impact of Correlations on MHD Equilibrium Reconstruction</i> Advisors: Dr. John Finn (Los Alamos National Lab) and Dr. Lang Lao (General Atomics) Compute and characterize correlations in magnetic data from the DIII-D tokamak for various discharges. Understanding these correlations can improve least squares reconstruction of MHD equilibrium profiles.	Summer 2008
	<b>Research Assistant</b> , Hendrix College <i>Investigating Geophysical Phenomena Using a Large Ring Laser</i> Advisor: Dr. Robert Dunn Implement a data analysis pipeline in LabVIEW for the analysis of experimental data from a large ring laser gyroscope.	Winter 2007-2008, Summer 2007, Summer 2006

- PUBLICATIONS “Low Mach Number Modeling of Convection in Helium Shells on Sub-Chandrasekhar White Dwarfs II: Bulk Properties of Simple Models,” **A. M. Jacobs**, M. Zingale, A. Nonaka, A. S. Almgren, & J. B. Bell, *Astrophysical Journal*, 827, 84 (2016). [ADS](#)
- In Progress*
- “OpenACC GPU accelerated microphysics in Maestro and Castro,” **A. M. Jacobs**, M. P. Katz, D. Wilcox, M. Zingale, C. M. Malone, O. Hernandez, & W. Zhang, 2016, in prep
- “Low Mach Number Modeling of Convection in Helium Shells on Sub-Chandrasekhar White Dwarfs III: Ignition in Simple Models,” **A. M. Jacobs**, M. Zingale, A. Nonaka, A. S. Almgren, & J. B. Bell, 2016, in prep for *Astrophysical Journal*
- COMPUTATIONAL ALLOCATIONS INCITE 2017 award on OLCF’s Cray XK7 Titan machine, “Approaching Exascale Models of Astrophysical Explosions,” M. Zingale (PI), A. S. Almgren, J. B. Bell, A. C. Calder, B. Friesen, R. Hix, **A. M. Jacobs**, D. Kasen, M. P. Katz, E. Lentz, C. M. Malone, B. Messer, A. Mezzacappa, A. Nonaka, T. Papatheodore, S. E. Woosley, & W. Zhang. (2017: 45 Mhr)
- INCITE 2015 award on OLCF’s Cray XK7 Titan machine, “Approaching Exascale Models of Astrophysical Explosions,” M. Zingale (PI), A. S. Almgren, J. B. Bell, A. C. Calder, **A. M. Jacobs**, D. Kasen, M. P. Katz, C. M. Malone, & S. E. Woosley. (2015: 50 Mhr, 2016: 55 Mhr)
- PRESENTATIONS “Little Exploding Dwarfs in the Sky,” **A. M. Jacobs**, December 1<sup>st</sup> 2016, Monash Centre for Astrophysics Seminar, Monash University, Victoria, Australia.
- “OpenACC Case Study: Accelerating Maestro’s Reactions,” **A. M. Jacobs**, Michael Zingale, Oscar Hernandez, May 24<sup>th</sup>-26<sup>th</sup> 2016, OLCF User Meeting, Oak Ridge National Lab, Oak Ridge, Tennessee.
- “Little Exploding Dwarfs and Nuclear Astrophysics on Compact Objects,” **A. M. Jacobs**, February 25<sup>th</sup> 2016, JINA Seminar, Michigan State University, East Lansing, Michigan.
- “Bulk Properties and Ignition in Simple Models of Double Detonation Type Ia Progenitors,” **A. M. Jacobs**, M. Zingale, A. Almgren, A. Nonaka, J. Bell, June 1<sup>st</sup> - 5<sup>th</sup> 2015, Fifty-One Erg – an international workshop on the physics and observations of supernovae and supernova remnants, Raleigh, North Carolina.
- “Helium Shells on Sub-Chandrasekhar White Dwarfs: Ignition and Convection,” **A. M. Jacobs**, M. Zingale, A. Nonaka, A. Almgren, J. Bell, January 5<sup>th</sup> 2015, American Astronomical Society’s 225<sup>th</sup> Meeting, Seattle, Washington.
- “Low Mach Number Modeling of Double-Detonation Type Ia Ignition,” **A. M. Jacobs**, April 11<sup>th</sup> 2014, Max Planck Institute for Astrophysics’ XVII Workshop on Nuclear Astrophysics, Ringberg Castle Conference Site, Germany.
- “Low Mach Number Modeling of Convection in Helium Shells on Sub-Chandrasekhar Mass White Dwarfs,” **A. M. Jacobs**, M. Zingale, A. Almgren, J. Bell, A. Nonaka, S. Woosley, May 13<sup>th</sup> - 17<sup>th</sup> 2013, Fifty-One Erg – an international workshop on the physics and observations of supernovae and supernova remnants, Raleigh, North Carolina.
- “The Impact of Correlations on MHD Equilibrium Reconstruction,” **A.M. Jacobs**, J.M. Finn, L.L. Lao, E.J. Strait, November 2008, Annual Meeting of the American Physical Society’s Division of Plasma Physics, Dallas, Texas.
- “Using a Large Ring Laser Gyroscope to Understand the Torsional Components of Near-Field Seismic Events,” **A. M. Jacobs**, April 2008, Annual April Meeting of the American Physical Society, St. Louis, Missouri.

“Transformation and Analysis of Data from a Large Ring Laser,” **A. M. Jacobs**, R. Dunn, April 2007, Fifteenth Annual Arkansas Space Grant Symposium, Morrilton, Arkansas.

AWARDS & RECOGNITION	Junior Researcher Fellowship, Stony Brook Institute for Advanced Computational Science	Fall 2014 - Summer 2016
	Elected Member of Phi Beta Kappa	Spring 2009
	Outstanding Undergraduate Poster Award, APS DPP Annual Meeting	Fall 2008
	Barry M. Goldwater Honorable Mention	Spring 2008
	Outstanding Presentation Award, APS April Meeting	Spring 2008
	Hendrix College Dean’s List	Fall 2005 - Spring 2008
	Barry M. Goldwater Honorable Mention	Spring 2007
	Joe G. Robbins Physics Award, Hendrix College	Spring 2007
	McHenry-Lane Freshman Mathematics Award, Hendrix College	Spring 2006
	Arkansas Governor’s Distinguished Scholarship, Arkansas Department of Education	Spring 2005
	Robert C. Byrd Scholarship, U.S. Department of Education	Spring 2005

WORKSHOPS & TRAINING PROGRAMS	Oak Ridge National Lab GPU Hackathon: OpenACC, Knoxville Marriott, Knoxville, TN, October 19 <sup>th</sup> -23 <sup>rd</sup> 2015.
	Argonne Training Program on Extreme-Scale Computing, Pheasant Run Resort/Argonne National Laboratory, July 28 <sup>th</sup> -August 9 <sup>th</sup> 2013.
	XSEDE, PRACE, and RIKEN International Summer School on HPC Challenges in Computational Sciences, New York University, June 23 <sup>rd</sup> -28 <sup>th</sup> 2013.
	INT Program INT-11-2b, “Astrophysical Transients: Multi-Messenger Probes of Nuclear Physics,” Institute for Nuclear Theory, University of Washington, July 2011.

EDUCATION & PUBLIC OUTREACH	“Nature’s Extremes: Magnetars,” Astronomy on Tap - Lansing, Lansing, Michigan.	November 15th, 2016
	“(Super)Computing the Stars,” Stony Brook Astronomy Open Night, Stony Brook, New York.	December 5th, 2014
	“Cosmology: Precisely Calculating How Little We Know,” Volunteer Speaker at Greene Correctional Facility, Coxsackie, New York.	Spring 2014
	Adopt-a-Physicist Mentor, <a href="http://www.adoptaphysicist.org/">http://www.adoptaphysicist.org/</a>	Fall 2012 Spring 2011

REFERENCES

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