

Christopher M. Malone

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Citizenship: USA

Education

Ph.D. Physics and Astronomy, SUNY Stony Brook, 2011

M.A. Physics, Stony Brook University, 2007

B.S. Physics, Florida Institute of Technology, 2005 *Magna Cum Laude*

B.S. Astronomy/Astrophysics, Florida Institute of Technology, 2005 *Magna Cum Laude*

Research Experience

Postdoctoral Researcher 2011–present
Stan Woosley UC Santa Cruz
Multidimensional simulations of astrophysical flows in both low Mach number regime — in the context of convection in Type I X-ray bursts and superbursts, using [Maestro](#) — and the fully compressible regime — in the context of detonations in Type Ia supernovae, using [Castro](#).

Research Assistant 2006–2011
Michael Zingale SUNY Stony Brook
Multidimensional simulations of Type I X-ray bursts and convection on the surface of a neutron star.

Research Scientist 2005
Sam Durrance Florida Space Research Institute
Assembly and benchmarking of high speed RAID systems to acquire HDTV-quality images from a prototype detector for the Station High-sensitivity Ocean Research Experiment (SHORE) proposed for the International Space Station.

Research Assistant 2003–2005
Marc Baarmand Florida Institute of Technology
Construction and calibration of the calibration system for the forward hadron calorimeter of the Compact Muon Solenoid experiment for the Large Hadron Collider at CERN.

Teaching Experience

Lab Instructor, Physics for Scientists and Engineers II, SUNY Stony Brook, Spring 2006

Lab Instructor, Physics for Scientists and Engineers I, SUNY Stony Brook, Fall 2005

Teaching Assistant, Physics II, Florida Institute of Technology, Spring 2004

Teaching Assistant, Physics I, Florida Institute of Technology, Fall 2003

Recent Posters, Presentations and Invited Talks

“From Convection to Ignition and Beyond: A (Computational) Story of M_{Ch} SNIa,” C. M. Malone, A. J. Nonaka, A. S. Almgren, J. B. Bell, S. Dong, H. Ma, S. E. Woosley, M. Zingale, 10 January 2013, AAS 221st Meeting, Long Beach, CA. *poster*

“Computational Astrophysics at UCSC,” S. Dong, C. M. Malone, 17 October 2012, Dell XL meeting, Texas Advanced Computing Center, Austin, TX. *invited talk*

“From Convection to Ignition and Beyond: A Computational Story of M_{Ch} SNIa,” C. M. Malone, A. J. Nonaka, A. S. Almgren, J. B. Bell, S. Dong, H. Ma, S. E. Woosley, M. Zingale, September 2012, Supernovae Illuminating the Universe: from Individuals to Populations, MPA, Garching, DE. *poster*

“Low Mach Number Hydrodynamics with MAESTRO,” C. M. Malone, 4 April 2012, Los Alamos National Laboratory Stellar Hydrodynamics Workshop, Santa Fe, NM. *invited talk*

“Multidimensional Simulations of Convection Preceding Type I X-ray Bursts,” C. M. Malone, A. S. Almgren, J. B. Bell, A. J. Nonaka, M. Zingale, 11 January 2011, AAS 217th Meeting, Seattle. *dissertation talk*

“Multidimensional Simulations of Convection Preceding a Type I X-ray Burst on the Surface of a Neutron Star,” C. M. Malone, 26 October 2010, T-2 Seminar, Los Alamos National Laboratory. *invited talk*

Recent Refereed Publications

Low Mach Number Modeling of Convection in Helium Shells on Sub-Chandrasekhar White Dwarfs. I. Methodology, M. Zingale, A. Nonaka, A. S. Almgren, J. B. Bell, C. M. Malone, R. J. Orvedahl, 2013, ApJ, **764**, 1, 97, doi: [10.1088/0004-637X/764/1/97](https://doi.org/10.1088/0004-637X/764/1/97)

Investigation of Turbulence in the Early Stages of a High Resolution Supernova Simulation, R. Sissneros, C. Malone, S. Woosley, A. Nonaka, SC12, Visualization showcase. *submission paper peer reviewed*

The Convective Phase Preceding Type Ia Supernovae, M. Zingale, A. Nonaka, A. S. Almgren, J. B. Bell, C. M. Malone, S. E. Woosley, 2011, ApJ, **740**, 8, doi: [10.1088/0004-637X/740/1/8](https://doi.org/10.1088/0004-637X/740/1/8)

Multidimensional Modeling of Type I X-ray Bursts. I. Two-Dimensional Convection Prior to the Outburst, C. M. Malone, A. Nonaka, A. S. Almgren, J. B. Bell, M. Zingale, 2011, ApJ, **728**, 118, doi: [10.1088/0004-637X/728/2/118](https://doi.org/10.1088/0004-637X/728/2/118)

MAESTRO: An Adaptive Low Mach Number Hydrodynamics Algorithm for Stellar Flows, A. Nonaka, A. S. Almgren, J. B. Bell, M. J. Lijewski, C. M. Malone, M. Zingale, 2010, ApJS, **188**, 353, doi: [10.1088/0067-0049/188/2/358](https://doi.org/10.1088/0067-0049/188/2/358)

Astrophysical Applications of the MAESTRO Code, M. Zingale, A. S. Almgren, J. B. Bell, C. M. Malone, A. Nonaka, 2008, Proceedings of SciDAC 2008, Journal of Physics: Conference Series, **125**, 012013, doi: [10.1088/1742-6596/125/1/012013](https://doi.org/10.1088/1742-6596/125/1/012013)

Service

External Reviewer for NASA Earth and Space Science Fellowship, 2012

Postdoctoral member of the Computing Planning and Management Committee monitoring the Network, Information, and Computing Services at UCO Lick, UC Santa Cruz, 2011-present

Mechanical Group Leader, NASA’s In-Situ Resource Utilization university competition, Florida Institute of Technology, 2004–2005

Vice President, Society of Physics Students, Florida Institute of Technology, 2004–2005

Secretary, Students for the Exploration and Development of Space, Florida Institute of Technology, 2004–2005