Michael Zingale / Curriculum Vitæ

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Present Position

Sept. 2021–   *Professor of Physics and Astronomy*, Stony Brook University, Stony Brook, NY

Research Interests

I am interested in developing and applying computational hydrodynamics algorithms to problems in nuclear astrophysics. A large part of this work is the development of low Mach number hydrodynamics code MAESTROeX and the compressible (magneto-, radiation-) hydrodynamics code Castro. Both codes are freely available on github, use adaptive mesh refinement, and hybrid parallelism techniques to run at scale on today's supercomputers. I apply these codes to studies of X-ray bursts, different progenitor models of Type Ia supernovae, and convection in stars. Importantly, all of the code, input files, workflow scripts needed to reproduce the science done in my research group is available in our github repos.

Education

2000   Ph.D. in Astronomy and Astrophysics, University of Chicago
thesis: *Helium Detonations on Neutron Stars*
advisor: Dr. J. W. Truran

1998   M.S. in Astronomy and Astrophysics, University of Chicago

1996   B.S. in Physics and Astronomy, University of Rochester, Magna Cum Laude
thesis: *Magnetohydrodynamical Wave Support of Molecular Clouds*
Minor in Mathematics, University of Rochester

Academic Appointments

2021–   *Astronomy Undergraduate Advisor*, Stony Brook University

2014–   *Affiliate*, Institute for Advanced Computational Science, Stony Brook University

2012–2021   *Associate Professor of Physics and Astronomy*, Stony Brook University

2006–2011   *Assistant Professor of Physics and Astronomy*, Stony Brook University

2001–2005   *Postdoctoral Researcher*, SciDAC Supernova Science Center, University of California, Santa Cruz. Worked on simulations of turbulent thermonuclear flames in Type Ia supernova. Initiated a collaboration with Lawrence Berkeley Lab to apply low Mach number hydrodynamics methods to astrophysical flames.   *advisor:* Dr. S. E. Woosley

2000–2001   *Research Associate*, Center for Astrophysical Thermonuclear Flashes, University of Chicago. One of the developers of the FLASH Code. Research focused on flame simulations in Type Ia supernovae. *advisor:* Dr. J. W. Truran

1997–2000   *Graduate student researcher*, Center for Astrophysical Thermonuclear Flashes and Department of Astronomy and Astrophysics, University of Chicago. One of the developers of the FLASH Code.   *advisor:* Dr. J. W. Truran

Honors / Awards

2022   *Outstanding Faculty Award*, Stony Brook University, Department of Physics and Astronomy

2019   *Godfrey Excellence in Teaching Award*, Stony Brook University, College of Arts and Sciences

2015–2016   *Scialog Fellow* for *Scialog: Time Domain Astrophysics: Stars and Explosions*

2006   *Presidential Early Career Award in Science and Engineering* (PECASE). Nomination through DOE NNSA.

2006   DOE Office of Nuclear Physics *Outstanding Junior Investigator* (OJI) Award for a proposal entitled: *Multidimensional Modeling of Astrophysical Thermonuclear Explosions*

2000   *Gordon Bell Award* in High Performance Computing, Special Category for a paper entitled *High-Performance Reactive Fluid Flow Simulations Using Adaptive Mesh Refinement on Thousands of Processors*, Calder et al. 2000. (SC 2000 conference)

2000   *Carl Sagan Award* for Excellence in Teaching (Dept. of Astronomy & Astrophysics, University of Chicago)

1997   *Gregor Wentzel graduate teaching award* (Dept. of Physics, University of Chicago)

1996   *Stoddard Prize* in physics for senior thesis (University of Rochester)

1996   *Flagg Award* for highest GPA in physics (University of Rochester)

1996   Inducted into Phi Beta Kappa honor society (University of Rochester)

1994   Inducted into Sigma Pi Sigma physics honor society (University of Rochester)

Publications

100+ refereed publications and conference proceedings

Research Grants/Contracts as Principal Investigator

Period	Description	Amount
2025–2028	Department of Energy, Office of Nuclear Physics, *Research in Nuclear Astrophysics: Supernovae, Compact Objects, and Algorithms*, supplement request DOE DE-FG02-87ER40317, Co-Is: Alan Calder, James Lattimer	$500,000
2024–2026	Research Foundation of SUNY, Seed Funding, *Building a Community for Reactive Flow Software Infrastructure*	$50,000
2025	Department of Energy, Office of Nuclear Physics, *Research in Nuclear Astrophysics: Supernovae, Compact Objects, and Algorithms*, supplement request DOE DE-FG02-87ER40317, Co-Is: Alan Calder, James Lattimer	$100,000 (additional supplement)

2024–2025	Department of Energy, Office of Nuclear Physics, *Research in Nuclear Astrophysics: Supernovae, Compact Objects, and Algorithms*, supplement request DOE DE-FG02-87ER40317, Co-Is: Alan Calder, James Lattimer	$110,000 + $10,000 (two supplements)
2021–2024	Department of Energy, Office of Nuclear Physics, *Research in Nuclear Astrophysics: Supernovae, Compact Objects, and Algorithms*, DOE DE-FG02-87ER40317, Co-Is: Alan Calder, James Lattimer	$1,095,000
2020–2023	Contract with Lawrence Berkeley National Laboratory (part of the DOE ECP Exastar project), contract # 7418390, Co-I: Alan Calder	$580,951
2018–2019	Contract with Lawrence Berkeley National Laboratory (part of the DOE ECP Exastar project), contract # 7418390, Co-I: Alan Calder	$144,588
2017–2022	Department of Energy, Office of Nuclear Physics & Office of Advanced Scientific Computing Research, *Towards Exascale Astrophysics of Mergers and Supernovae (TEAMS)* (SBU subcontract through MSU, multi-institution collaboration, DE-SC0017955), Co-Is: Alan Calder, James Lattimer	$616,000
2011–2013	Department of Energy, Office of Nuclear Physics (2.5-year renewal), *Multidimensional Modeling of Astrophysical Thermonuclear Explosions*, DOE DE-FG02-06ER41448	$253,000
2010–2011	Contract with Lawrence Livermore National Laboratory, *Multi-dimensional Modeling of Nova with Realistic Nuclear Physics*, 2010: B589924; 2011: B593287	$99,768
2009–2011	Department of Energy, Office of Nuclear Physics Outstanding Junior Investigator Award (2-year renewal), *Multidimensional Modeling of Astrophysical Thermonuclear Explosions*, DOE DE-FG02-06ER41448	$186,000
2007–2009	Contract with Lawrence Livermore National Laboratory, *Verification and Validation of Radiation Hydrodynamics for Astrophysical Applications*, 2007: B568673; 2008: B574691; 2009 B582735	$150,000
2006–2009	Department of Energy, Office of Nuclear Physics Outstanding Junior Investigator Award, *Multidimensional Modeling of Astrophysical Thermonuclear Explosions*, DOE DE-FG02-06ER41448	$255,000

Research Grants/Contracts as Co-Investigator

2019–2022	National Science Foundation, *REU Site: Broadening undergraduate research participation in Physics and Astronomy at Stony Brook University*, PI: Matthew Dawber, Co-Is: Navid Vafael-Najafabadi, Michael Zingale	$273,308

2018–2021	Department of Energy, Office of Nuclear Physics, *Research in Nuclear Astrophysics: Supernovae, Compact Objects, and Algorithms*, DOE DE-FG02-87ER40317, PI: James Lattimer, Co-Is: Alan Calder, Michael Zingale	$1,140,000
2015–2018	Department of Energy, Office of Nuclear Physics, *Research in Nuclear Astrophysics: Supernovae, Compact Objects, and Algorithms*, DOE DE-FG02-87ER40317, PI: James Lattimer, Co-Is: Alan Calder, Michael Zingale	$1,100,000
2013–2015	Department of Energy, Office of Nuclear Physics *Research in Nuclear Astrophysics: Supernovae, Compact Objects, and Algorithms*, DOE DE-FG02-87ER40317, PI: James Lattimer, Co-Is: Alan Calder, Michael Zingale	$640,000
2012–2015	NSF, *White Dwarf Mergers as Progenitors of Type Ia Supernovae*, AST-1211563, PI: Alan Calder, Co-Is: Doug Swesty, Michael Zingale	$437,643

Large Computer Time Allocations

2025	PI on a NERSC 2025 allocation, *Three-dimensional studies of white dwarfs, massive stars, and neutron star systems* (50k CPU node-hours; 50k GPU node-hours)
2024	PI on a NERSC 2024 allocation, *Three-dimensional studies of white dwarfs, massive stars, and neutron star systems* (100k CPU node-hours; 100k GPU node-hours)
2023	PI on a NERSC 2023 allocation, *Three-dimensional studies of white dwarfs, massive stars, and neutron star systems* (100k CPU node-hours; 150k GPU node-hours)
2023–	PI on an INCITE 2023 award, *Exascale Models of Astrophysical Thermonuclear Explosions* (2023: 400 k node hours on OLCF summit, 300 k node hours on OLCF frontier, 100 k node hours on ALCF polaris; 2024: 400 k node hours on OLCF frontier, 75 k node hours on ALCF polaris; 450 k node hours on OLCF frontier, 50 k node hours on ALCF polaris)
2022	PI on a NERSC 2022 allocation, *Three-dimensional studies of white dwarfs, massive stars, and neutron star systems* (80k CPU node-hours; 100k GPU node-hours)
2021–2022	PI on an INCITE 2021 award *Approaching Exascale Models of Astrophysical Explosions* (2021: 700 k node hours on OLCF summit; 2022: 590 k node hours on OLCF summit, 100 k node hours on ALCF polaris)
2020	PI on a NERSC 2021 allocation, *Three-dimensional studies of white dwarfs, massive stars, and neutron star systems* (30 M MPP hours)
2019	PI on a NERSC 2020 allocation, *Three-dimensional studies of white dwarfs, massive stars, and neutron star systems* (30 M MPP hours)
2019–2020	PI on an INCITE 2019 award for at OLCF, *Approaching Exascale Models of Astrophysical Explosions* (2019: 1.5 M node hours on titan, 105 k node hours on summit; 2020: 300 k node hours on summit)
2019	PI on a NERSC 2019 allocation, *Three-dimensional studies of white dwarfs, massive stars, and neutron star systems* (27.5 M MPP hours)

2018	PI on a NERSC 2018 allocation, *Three-dimensional studies of white dwarf and neutron star systems* (20.85 M MPP hours)
2018	PI on an INCITE 2018 award for at OLCF, *Approaching Exascale Models of Astrophysical Explosions* (40 M hours)
2017	PI on a NERSC 2017 allocation, *Three-dimensional studies of white dwarf and neutron star systems* (5 M MPP hours)
2017	PI on an INCITE 2017 award for the OLCF Cray XKT titan machine, *Approaching Exascale Models of Astrophysical Explosions* (45 M hours)
2016	PI on a NERSC 2016 allocation, *Three-dimensional studies of neutron star systems* (4.6 M MPP hours)
2015–2016	PI on an INCITE 2015 award for the OLCF Cray XK7 titan machine, *Approaching Exascale Models of Astrophysical Explosions* (2015: 50 M hours, 2016: 55 M hours)
2011–2015	Co-I on NSF PRAC for NCSA/Blue Waters, *Type Ia Supernovae* (9.1 M node hours)
2015	PI on a NERSC 2015 allocation, *Three-dimensional studies of convection in X-ray bursts* (5.9 M MPP hours)
2014	PI on a NERSC 2014 allocation, *Three-dimensional studies of convection in X-ray bursts* (14 M MPP hours)
2014	Co-I on a NERSC 2014 allocation, *Type Ia Supernovae and X-Ray Bursts* (9 M MPP hours)
2012–2014	Co-I on an INCITE 2012 award for the OLCF Cray XT5, *Petascale Simulations of Type Ia Supernovae* (2012: 46 M hours; 2013: 55 M hours; 2014: 50 M hours)
2013	PI on XSEDE allocation on Kraken/NICS, *CASTRO Simulations of Merging White Dwarfs* (4.1 M hours)
2013	Co-I on a NERSC 2013 allocation, *Type Ia Supernovae and X-ray Bursts* (3.5 M MPP hours)
2011	Co-I on a TeraGrid allocation on the Kraken machine, *Thermonuclear Bursts on the Surfaces of Compact Astrophysical Objects* (2.1 M hours, Oct. 2011)
2011	Co-I on an INCITE 2011 award for the Cray XT5/ORNL machine, *Petascale Simulations of Type Ia Supernovae* (50 M hours)
2010	PI on a TeraGrid allocation on the Kraken machine, *Thermonuclear Bursts on the Surfaces of Compact Astrophysical Objects* (1 M hours; Oct. 2010)
2010	Co-I on an INCITE 2010 award for the Cray XT5/ORNL, *Multidimensional Models of Type Ia Supernovae from Ignition to Observables* (5 M hours initially + 20 M hours supplement)
2007–2009	Co-Investigator on an INCITE 2007 award for the Cray XT3/ORNL, *First Principles Models of Type Ia Supernovae.* (2007: 4 M hours; 2008: 3.5 M hours; 2009: 3 M hours)
2006	Co-Principal Investigator on the Leadership Computing Facility (ORNL) allocation, *Ignition and Flame Propagation in Type Ia Supernovae.* (3 M hours)

Stony Brook Physics and Astronomy Teaching Experience

Astronomy Today (AST 100)	A one-credit undergraduate seminar on current astronomy topics, where students lead the discussion on current topics. (F 2010, F 2011, F 2014, F 2015, F 2020, F 2022, F 2024)
Introduction to the Solar System (AST 105)	An overview of solar system topics (solar system dynamics, Kepler's laws, planetary processes, exoplanets, . . .) for non-majors. (F 2007, F 2008, F 2009, F 2011, S 2014, S 2015)
Astronomy (AST 203)	A calculus-based introduction to astronomy and astrophysics for majors, covering the basics of radiation, spectra, binary stars, stellar evolution, ISM, clusters, galaxies, and cosmology. (S 2007, S 2008, S 2009, S 2010, S 2011, S 2012, S 2017, S 2019)
Introduction to Planetary Sciences (AST 205)	A calculus-based introduction to the solar system for majors covering basic solar system motion, planetary processes, exoplanets, and solar system formation. (F 2010, F 2014, F 2016)
Stars and Radiation (AST 341)	An overview on stellar physics for undergraduate astronomy majors. (F 2018, F 2020, F 2022, F 2024)
Special Topcs: Computational Astrophysics (AST 390)	An introduction to numerical methods used throughout computational astrophysics. (S 2023, S 2025)
Computational Methods in Physics and Astrophysics I (PHY 504)	An introduction to the Unix command line, version control, C++, data structures, and scientific programming. (S 2022, S 2024)
Stars (PHY 521)	A graduate-level introduction to the physical processes inside stars, stellar structure and atmospheres, and stellar explosions. (F 2013, F 2015, F 2021, F 2023)
Python for Scientific Computing (PHY 546; formerly grad special topics)	A one-hour weekly graduate seminar that I created that introduces python and a variety of libraries (NumPy, matplotlib, SciPy, SymPy) for numerical analysis, visualization, and data processing, as well as basic software engineering practices (git/github, debugging, testing). (S 2014, S 2015, S 2016, S 2017, S 2018, S 2022, S 2023, S 2024, S 2025)
Computational Methods in Physics and Astrophysics II (PHY 604; formerly grad special topics)	A practical introduction to good development practices, order-of-accuracy, numerical differentiation, integration, interpolation, ODEs, root finding, fitting, FFTs, Monte Carlo, solving hyperbolic, elliptical, and parabolic PDEs, computational fluid dynamics, and parallel programming, with examples in python. (S 2013, S 2016, F 2017)
Astrophysical Fluids and Plasmas (grad special topics)	An introduction to hydrodynamics, fluid instabilities, applications to astrophysics, and an introduction to MHD. (S 2018, S 2021)

The Application of Simulation in Astrophysics (grad special topics)	Develop the equations of hydrodynamics, instabilities common in astrophysics, and discuss numerical methods for solving the Euler equations (finite-volume methods, Riemann solvers, etc.) (S 2006)

Other Teaching Experience

Summer 2023	Lecturer for the Flatiron/CCA Fluid Dynamics Summer School on *Coding Solvers for Fluids* (`https://zingale.github.io/cca-summer-school`)
Fall 2020	Instructor for Software Carpentry training event at Institute for Advanced Computational Science, Stony Brook, NY (taught: bash, git)
Summer 2020	Developed and led the Physics and Astronomy REU *Python Tutorial* of introductory tutorials and exercises over the 10 week program (`https://github.com/sbu-phy-ast-reu/reu-python-tutorial`).
Feb 2019	Instructor for Software Carpentry training event at Institute for Advanced Computational Science, Stony Brook, NY (taught: python, git).
Summer 2017	Developed and led the *Python Boot Camp* week-long tutorial for the IACS Data + Compute = Discovery Research Experience for Undergraduates program (`https://sbu-python-summer.github.io/`)
Summer 2001	*University of Chicago / Department of Computer Science:* Teaching assistant for the Introduction to Programming in C class in the Computer Science Professional Masters Program at the University of Chicago.
1997–1998	*Center of Astronomical Research in Antarctica (CARA) outreach program:* Developed and taught thermodynamics, E&M, and mechanics experiments to grade 7–12 Chicago school students. Awarded the Carl Sagan teaching award.
1996–1997	*Introductory Physics Teaching Assistant (University of Chicago):* Taught weekly discussion and laboratory sections. Awarded the Gregor Wentzel teaching award.

Professional Development

2018	Software Carpentry instructor certification
2001	student at Finite Volume Upwind and Centered Methods for Hyperbolic Conservation Laws (Barcelona, Spain)
1999	student at NASA Summer School for High Performance Computational Earth and Space Sciences

Stony Brook Physics and Astronomy Service

2024	Promotion committee for appointment to Professor for Department colleague, Dept. of Physics and Astronomy
2020–	Astronomy Director of Undergraduate Studies
2020–	Undergraduate Curriculum Committee, Dept. of Physics and Astronomy

2017–	Undergraduate Research Committee, Dept. of Physics and Astronomy
2021	Promotion committee for appointment to Professor for Astronomy colleague, Dept. of Physics and Astronomy
2018–2021	Diversity Committee, Dept. of Physics and Astronomy (chair: 2019, 2021)
2019	Three-year Reappointment Committee for Physics colleague, Dept. of Physics and Astronomy (chair)
2011–2012, 2013–2019	Strategic Advising Committee, Dept. of Physics and Astronomy
2017	Tenure Committee for Astronomy colleague, Dept. of Physics and Astronomy
2006–2007, 2016–2017	Graduate Admission Committee, Dept. of Physics and Astronomy
2016–2017	Examine the Graduate Exam Committee, Dept. of Physics and Astronomy
2013–2016	Astronomy Open Nights coordinator, Dept. of Physics and Astronomy
2008, 2014–2015	Department Chair Search Committee, Dept. of Physics and Astronomy
2014–2015	Three-year Reappointment Committee for astronomy colleague, Dept. of Physics and Astronomy
2013–2014	Undergraduate Astronomy Coordinator, Dept. of Physics and Astronomy
2013–2014	Tenure Committee for Astronomy colleague, Dept. of Physics and Astronomy
2013–2014	Astronomy Faculty Search Committee, Dept. of Physics and Astronomy
2013	Ad-hoc Committee for High-Energy Physics Hire, Dept. Physics and Astronomy
2007–2012	Colloquium Committee, Dept. of Physics and Astronomy (chair: Fall 2008, Fall 2009, Fall 2010, Fall 2011)
2011	CESAME/Physics and Astronomy joint hire committee, Dept. of Physics and Astronomy
2009	Long Range Planning Committee, Dept. of Physics and Astronomy
2007–2009	Graduate Advising Committee, Dept. of Physics and Astronomy
2007–2008	Astronomy Faculty Search Committee, Dept. of Physics and Astronomy
2006–2007	NYCCS Faculty Search Committee (Dept. level), Dept. of Physics and Astronomy

Stony Brook University Service

2010	Teaching Learning Technology (TLT) Advisory Committee
2006–2009	University Senate Committee on Computing and Communications (chair: Feb. 2008 – May 2009)

Professional Service

2025	Member of the APS Hans Bethe Prize Committee

2024–	Member-at-Large for APS Division of Computational Physics Executive Committee
2024	Member of the APS DCOMP Metropolis Dissertation Award Committee
2022–	Co-founder and organizer of *Virtual Astronomy Software Talks* seminar series
2020–	Associate Editor for *Living Reviews in Computational Astrophysics*
2014–	OLCF User Group Executive Board (Elected to 3 year term 2014, re-elected in 2017; re-elected in 2020; re-elected in 2023; Vice chair: 2014–2015, 2018–2019; Chair: 2015–2016, 2019–2020)
ongoing	Referee for *Astronomy and Astrophysics*, the *Astrophysical Journal*, *Communications in Applied Mathematics and Computational Science*, *Computing in Science and Engineering*, *Journal of Computational Physics*, *Journal of Open Source Software*, *Journal of Open Source Education*, *Monthly Notices of the Royal Astronomical Society*, *Nature*, *Nuclear Physics A*, *Open Research Europe*, and *Physical Review Letters*
2021	Served on a NASA Open Source Tools, Frameworks, and Libraries review panel
2020	External review committee member for Operational Assessment of the Oak Ridge Leadership Computing Facility (OLCF) (April 21–22, 2020)
2006–	Annual *Astronomy Open Night* public outreach talks, Stony Brook (Open Night coordinator from Fall 2013–Fall 2016)
2019	Reviewer for UK Science & Technology Facilities Council
2016–2019	Elected to the NERSC User's Group Executive Committee (NUGEX)
2018	Reviewer for UK DiRAC HPC Facility
2018	Reviewer for Pazy Foundation / Israeli University Planning and Budgeting Committee and the Israeli Atomic Energy Commission (IAEC)
2016	Reviewer for Deutsche Forschungsgemeinschaft
2013, 2016, 2023	Served on a NASA ATP grant review panel
2011, 2014, 2016, 2018, 2020, 2022, 2023, 2024	External reviewer for DOE Office of Nuclear Physics
2014, 2016	External reviewer for NSF PRAC
2013	External reviewer for NSF Office of Cyber Infrastructure
2012	Reviewer for the Great Lakes Consortium for Petascale Computation (2012) proposals for the NCSA Blue Waters machine.
2007	External reviewer for NASA Astrophysics Theory and Fundamental Physics Program
2006	Served on NSF Astronomy and Astrophysics Program review panel

Meeting Organization

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2024	Program Committee for *Physics Domain* of the 2025 *Platform for Advanced Scientific Computing* (PASC) conference (Brugg, Switzerland, June 2025)
2023	Program Committee Co-Chair for *Physics Domain* of the 2024 *Platform for Advanced Scientific Computing* (PASC) conference (Zurich, Switzerland, June 2024)
2023	Co-chair of the Astronomy, Astrophysics, and Physics track of the SciPy 2023 meeting (July 2023)
2023	Program Committee Co-Chair for *Physics Domain* of the 2023 *Platform for Advanced Scientific Computing* (PASC) conference (Davos, Switzerland, June 2023)
2022	Organizer of the *Physics and Astrophysics of Common Envelopes* meeting (Los Alamos National Laboratory, May 2022)
2022	Co-chair of the Physics and Astronomy track of the SciPy 2022 meeting (July 2022)
2022	Program Committee for *Physics Domain* of the 2022 *Platform for Advanced Scientific Computing* (PASC) conference (Basel, Switzerland, June 2022)
2022	Organizer of APS April meeting DCOMP/DAP Invited Session *Frontiers in Computational Stellar Astrophysics* (NYC, April 2022)
2021	Co-chair of the Physics and Astronomy track of the SciPy 2021 meeting (virtual, July 2021)
2021	Co-organizer of a SIAM CSE 2021 mini-symposium *Performance Portability in Astrophysics Simulation Codes* (virtual, Feb. 2021)
2020	Co-chair of the Astronomy and Astrophysics track of the SciPy 2020 meeting (virtual, July 2020)
2020	Co-organizer of the *yAC: yt at CCA* meeting (Flatiron Institute / Center for Computational Astrophysics, March 2020)
2019	Scientific Organizing Committee, 2019 Compressible Convection Conference (Newcastle, UK, Sept. 2019)
2018–2019	Member of the SC19 Reproducibility Challenge track committee
2017	Co-organizer of the third *New York Area Computational Astrophysics meeting* (Flatiron Institute / Center for Computational Astrophysics, Sept. 2017)
2016–2017	Member of the Program Committee for the *13th International Workshop on OpenMP (IWOMP) 2017* (Stony Brook, NY 2017)
2016	Co-organizer of the second *New York Area Computational Astrophysics meeting* (American Museum of Natural History, April 2016)
2015	Scientific organizing committee for the workshop *GNASH: The anomalous metal-poor stars and convective-reactive nuclear astrophysics* (U. Victoria, Victoria, BC)
2015	Co-organizer of the *New York Area Computational Astrophysics meeting* (Farmingdale State College, April 2015)
2014–2015	Organizing committee for the 2015 *Oak Ridge Leadership Computing Facility User Meeting*

2012–2013	Local organizing committee for the *National Nuclear Physics Summer School* (NNPSS 2013).
2012	Co-convener of *Thermonuclear explosions: Type Ias, Novae, and X-ray bursts* working group at *Nuclear Astrophysics Town Meeting* (Detroit, MI)

Community Astrophysical Software / Other Projects

ongoing	Co-developer of the publicly-available low Mach number hydrodynamics code MAESTROeX, `https://amrex-astro.github.io/MAESTROeX/`
ongoing	Co-developer of the publicly-available compressible (radiation-, magneto-) hydrodynamics code Castro, `https://amrex-astro.github.io/Castro/`
ongoing	Creator and co-developer of the publicly-available teaching and prototyping hydrodynamics code pyro, `https://github.com/python-hydro/pyro2/`
ongoing	Creater / co-developer of the pynucastro library, `https://github.com/pynucastro/pynucastro`
ongoing	Creator of the Open Astrophysics Bookshelf github organization `http://open-astrophysics-bookshelf.github.io/` and author of the open text *Introduction to Computational Astrophysical Hydrodynamics*
ongoing	Developed and distribute many simple teaching codes (advection, Eulerian compressible and incompressible hydro solvers, multigrid, etc., with accompanying notes and exercises), `http://www.astro.sunysb.edu/mzingale/software/`
ongoing	Created a library of astronomy animations introducing basic concepts (e.g. Kepler's laws, blackbody radiation, waves, binary star/exoplanet dynamics, etc.) as well as more advanced concepts (e.g. entropy in convection), `http://zingale.github.io/astro_animations/`, also available on youtube, `http://www.youtube.com/user/michaelzingale`
ongoing	Contributor to and *project member* of the volumetric visualization package yt
2020–	Ombudsperson for the TARDIS Monte Carlo radiative transfer code (`https://tardis-sn.github.io/tardis/team.html`)
1997–2002	Original member of the FLASH Code development team

Guest/Visiting Appointments

2019–2020	Visiting Scholar at the Flatiron Institute / Center for Computational Astrophysics
2000–2003	Guest Appointment at Argonne National Laboratory / Mathematics and Computer Science Division
April 2001	Guest at the Max-Planck-Institut für Astrophysik

Professional Societies
Member of the American Astronomical Society
Member of the American Physical Society
Member of the Society for Applied and Industrial Mathematics

Students Advised

PhDs advised	Chris Malone (Stony Brook, PhD 2011, thesis: *Multidimensional Simulations of Convection Preceding a Type Ia X-ray Bursts*)
	Max Katz (Stony Brook, PhD 2016, thesis: *White Dwarf Mergers on Adaptive Meshes*)
	Adam Jacobs (Stony Brook, PhD 2016, thesis: *The Explosive Possibilities of Little Dwarfs: Low-Mach Number Modeling of Thin Helium Shells on Sub-Chandrasekhar Mass White Dwarfs*)
	Maria Guadalupe Barrios Sazo (Stony Brook, PhD 2020, thesis: *Studies toward the modeling of White Dwarf Mergers and Magnetohydrodynamics*)
	Xinlong Li (Stony Brook, PhD 2021, thesis: *3-d Simulation of Convection in an Electron-capture O-Ne Core*)
	Alexander Smith Clark (Stony Brook, PhD 2025, thesis: *Modeling Astrophysical Reactions with Applications in Multidimensional Classical CO-Novae Simulations*)
	Eric Johnson (Stony Brook, PhD 2025, thesis: *Developing Multidimensional Simulations of H/He Flames in Type I X-ray Bursts*)
Masters students advised	Mu-Hung Chang (Stony Brook, MA 2017, thesis: *Application of Spectral Deferred Correction for 1-D Astrophysical Detonation*)
	Hengrui Zhan (Stony Brook, MA 2019, thesis: *Implementation of an Improved Multipole Expansion Method*)
	Zhi Chen (Stony Brook, MA 2023, thesis: *Sensitivity of He Flames in X-ray Bursts to Nuclear Physics*)
	Sam Glosser (Stony Brook, MA 2024, thesis: *Identifying the Classical Thermonuclear Regime of Plasma Screening in Astrophysical Flows*
postdocs advised	Alice Harpole (worked on Maestro rotation support, GPU acceleration, algorithm development, massive star evolution).
current grad students	Khanak Bhargava
	Zhi Chen
	Melissa Rasmussen
undergrad honors theses	Kiran Eiden (Stony Brook, BS 05/2020, thesis *Propagation of Thermonuclear Flame Fronts in Type I X-ray Bursts*)
	Abigail Bishop (Stony Brook, BS 05/2019, thesis *Expanding the Modeling of Type Ia Supernovae*)
	Luke Nolan (Stony Brook, BS 05/2016, thesis *Flame Wave Propagation on the Surface of Neutron Stars During Type I X-Ray Bursts*)

References

references available upon request