

Curriculum Vitae

Michael Zingale

Future Position:

Assistant Professor of Physics and Astronomy, SUNY Stony Brook, Stony Brook, NY (beginning Jan. 2006)

Present Position:

Postdoctoral Researcher, Department of Astronomy and Astrophysics, University of California, Santa Cruz

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Research Interests:

Computational fluid dynamics simulation of Type Ia supernovae (both on the flame scale and the star scale), and X-ray bursts. Application of low speed hydrodynamics methods to astrophysical problems.

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

Work Experience:

2001-present *University of California, Santa Cruz, Department of Astronomy and Astrophysics:*
Postdoctoral Researcher for the SciDAC Supernova Science Center. Worked on simulations of turbulent thermonuclear flames in Type Ia supernova. Initiated a collaboration with the Center for Computational Science and Engineering group at Lawrence Berkeley Lab to apply low Mach number hydrodynamics methods to astrophysical flames.
advisor: Dr. S. E. Woosley

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

Work Experience (continued):

- 1997-2000 *University of Chicago, Department of Astronomy and Astrophysics:*
 Graduate student researcher for the Center on Astrophysical Thermonuclear Flashes. One of the developers of the FLASH Code, an adaptive-mesh, parallel hydrodynamics code. Primary research focused on numerical simulations of helium detonations on neutron stars. This research became my Ph.D. thesis.
advisor: Dr. J. W. Truran
- 1995-1996 *University of Rochester, Department of Physics and Astronomy:*
 Investigated magnetohydrodynamical wave support of molecular clouds. This research became the basis for my senior thesis.
advisor: Dr. M. Wardle
- 1994
 (summer) *Fermi National Accelerator Laboratory:*
 Examined mass measurement techniques for the top quark at the Collider Detector Facility at Fermilab.
advisor: Dr. P. Tipton
- 1992 & 1993
 (summer) *Princeton Plasma Physics Laboratory:*
 Updated and converted physics analysis programs across computing platforms.
advisor: Dr. C. K. Phillips

Publications:

Over 20 refereed publications and conference proceedings—publication list available upon request.

Teaching Experience:

- 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:*
 Planned and taught laboratories to Chicago public school students in grades 7 through 12. Developed experiments in thermodynamics, electricity and magnetism, and mechanics. Awarded the Carl Sagan award for excellence in teaching.
- 1996-1997 *Introductory Physics Teaching Assistant (University of Chicago):*
 Taught weekly hour long discussion sections and four hour laboratory sections in basic physics. Awarded the Gregor Wentzel teaching award.

Programs:

- April 2001 Guest at the Max-Planck-Institut für Astrophysik
- 2001 Finite Volume Upwind and Centered Methods for Hyperbolic Conservation Laws (Barcelona, Spain)
- 1999 NASA Summer School for High Performance Computational Earth and Space Sciences

Professional Activities:

- 2004 Member of the Society of Industrial and Applied Mathematics
- 2000-2003 Guest Appointment at Argonne National Laboratory / Mathematics and Computer Science Division
- 1999-2005 Member of the American Astronomical Society

Honors / Awards:

- 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)

References:

Professor Robert Rosner	Professor James Truran	Professor Stan Woosley
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