

Michael Zingale / Publication List

Refereed Publications

1. *Low Mach Number Modeling of Type Ia Supernovae. IV. White Dwarf Convection*,
M. Zingale, A. S. Almgren, J. B. Bell, A. Nonaka, & S. E. Woosley
2009, ApJ, 704, 196.
2. *A New Low Mach Number Approach in Astrophysics*,
A. S. Almgren, J. B. Bell, A. Nonaka, & M. Zingale
2009, CiSE, 11, 24.
3. *Turbulence-Flame Interactions in Type Ia Supernovae*,
A. J. Aspden, J. B. Bell, M. S. Day, S. E. Woosley, & M. Zingale
2008, ApJ, 689, 1173.
4. *Low Mach Number Modeling of Type Ia Supernovae. III. Reactions*,
A. S. Almgren, J. B. Bell, A. Nonaka, & M. Zingale
2008, ApJ 684, 449.
5. *Propagation of the First Flames in Type Ia Supernovae*,
M. Zingale and L. J. Dursi
2007, ApJ, 656, 333.
6. *Low Mach Number Modeling of Type Ia Supernovae. II. Energy Evolution*,
A. S. Almgren, J. B. Bell, C. A. Rendleman, & M. Zingale
2006, ApJ, 649, 927.
7. *Low Mach Number Modeling of Type Ia Supernovae. I. Hydrodynamics*,
A. S. Almgren, J. B. Bell, C. A. Rendleman, & M. Zingale
2006, ApJ, 637, 922.
8. *Three-Dimensional Numerical Simulations of Rayleigh-Taylor Unstable Flames in Type Ia Supernovae*,
M. Zingale, S. E. Woosley, C. A. Rendleman, M. S. Day, & J. B. Bell
2005, ApJ, 632, 1021.
9. *Issues with Validating an Astrophysical Simulation Code*,
A. C. Calder, L. J. Dursi, B. Fryxell, T. Plewa, V. G. Weirs, T. Dupont, H. F. Robey,
R. P. Drake, B. A. Remington, G. Dimonte, J. Hayes, J. M. Stone, P. M. Ricker, F. X. Timmes,
M. Zingale, & K. Olson
2004, CiSE, 6, 10.

10. *Direct Numerical Simulations of Type Ia Supernovae Flames II: The Rayleigh-Taylor Instability*,
J. B. Bell, M. S. Day, C. A. Rendleman, S. E. Woosley, & M. Zingale
2004, ApJ, 608, 883.
11. *Direct Numerical Simulations of Type Ia Supernovae Flames I: The Landau-Darrieus Instability*,
J. B. Bell, M. S. Day, C. A. Rendleman, S. E. Woosley, & M. Zingale
2004, ApJ, 606, 1029.
12. *On the Nonlinear Evolution of Wind-driven Gravity Waves*,
A. Alexakis, A. C. Calder, L. J. Dursi, R. Rosner, J. W. Truran, B. Fryxell, M. Zingale,
F. X. Timmes, K. Olson, & P. Ricker
2004, Phys. of Fluids, 16, 9, 3256.
13. *Adaptive Low Mach Number Simulations of Nuclear Flames*,
J. B. Bell, M. S. Day, C. A. Rendleman, S. E. Woosley, & M. Zingale
2004, JCP, 195, 2, 677.
14. *A Comparative Study of the Turbulent Rayleigh-Taylor Instability Using High-Resolution
Three-Dimensional Numerical Simulations: The Alpha-Group Collaboration*,
G. Dimonte, D. L. Youngs, A. Dimits, S. Weber, M. Marinak, S. Wunsch, C. Garasi,
A. Robinson, M. J. Andrews, P. Ramaprabhu, A. C. Calder, B. Fryxell, J. Biello, L. Dursi,
P. MacNeice, K. Olson, P. Ricker, R. Rosner, F. Timmes, H. Tufo, Y.-N. Young, & M. Zingale
2004, Phys. of Fluids, 16, 5, 1668.
15. *On Heavy Element Enrichment in Classical Novae*,
A. Alexakis, A. C. Calder, A. Heger, E. F. Brown, L. J. Dursi, J. W. Truran, R. Rosner,
D. Q. Lamb, F. X. Timmes, B. Fryxell, M. Zingale, P. M. Ricker, & K. Olson
2004, ApJ, 602, 931.
16. *Morphology of Rising Hydrodynamic and Magneto-hydrodynamic Bubbles from Numerical
Simulations*,
K. Robinson, L. J. Dursi, P. M. Ricker, R. Rosner, A. C. Calder, M. Zingale, T. Linde,
A. Caceres, B. Fryxell, K. Olson, K. Riley, A. Siegel, J. W. Truran, & N. Vladimirova
2004, ApJ, 601, 621.
17. *Parallel netCDF: A High-Performance Scientific I/O Interface*,
J. Li, W.-k. Laio, A. Choudhary, R. Ross, R. Thakur, R., W. Gropp, R. Latham, A. Siegel,
B. Gallagher, & M. Zingale
2003, technical paper, SC2003.

18. *The Response of Astrophysical Thermonuclear Flames to Curvature*,
L. J. Dursi, M. Zingale, A. Calder, B. Fryxell, F. X. Timmes, N. Vladimirova, R. Rosner,
A. Caceres, D. Q. Lamb, K. Olson, P. M. Ricker, K. Riley, A. Siegel, & J. W. Truran
2003, ApJ, 595, 955.
19. *Mapping Initial Hydrostatic Models in Godunov Codes*,
M. Zingale, L. J. Dursi, J. ZuHone, A. C. Calder, B. Fryxell, T. Plewa, J. W. Truran,
A. Caceres, K. Olson, P. M. Ricker, K. Riley, R. Rosner, A. Siegel, F. X. Timmes, &
N. Vladimirova
2002, ApJS, 143, 539.
20. *On Validating an Astrophysical Simulation Code*,
A. C. Calder, B. Fryxell, T. Plewa, R. Rosner, L. J. Dursi, V. G. Weirs, T. Dupont, H. F. Robey,
J. O. Kane, B. A. Remington, R. P. Drake, G. Dimonte, M. Zingale, F. X. Timmes, K. Olson,
P. Ricker, P. MacNeice, & H. M. Tufo
2002, ApJS, 142, 201.
21. *A Case Study in Application I/O on Linux Clusters*,
R. Ross, D. Nurmi, A. Cheng, & M. Zingale
2001, technical paper, SC2001.
22. *Helium Detonations on Neutron Stars*,
M. Zingale, F. X. Timmes, B. Fryxell, D. Q. Lamb, K. Olson, A. C. Calder, L. J. Dursi,
P. Ricker, R. Rosner, P. MacNeice, & H. Tufo
2001, ApJS, 133, 195.
23. *High-Performance Reactive Fluid Flow Simulations Using Adaptive Mesh Refinement on
Thousands of Processors*,
A. C. Calder, B. C. Curtis, L. J. Dursi, B. Fryxell, G. Henry, P. MacNeice, K. Olson, P. Ricker,
R. Rosner, F. X. Timmes, H. M. Tufo, J. W. Truran, & M. Zingale
2000, Gordon Bell Prize winner/Special category, technical paper, SC2000.
24. *On the Cellular Structure of Carbon Detonations*,
F. X. Timmes, M. Zingale, K. Olson, B. Fryxell, P. Ricker, A. C. Calder, L. J. Dursi,
J. W. Truran, & R. Rosner
2000, ApJ, 543, 938.
25. *FLASH: An Adaptive Mesh Hydrodynamics Code for Modeling Astrophysical Thermonuclear
Flashes*,
B. Fryxell, K. Olson, P. Ricker, F. X. Timmes, M. Zingale, D. Q. Lamb, P. MacNeice,
R. Rosner, & H. Tufo
2000, ApJS, 131, 273.

26. *Flash Code: Studying Astrophysical Thermonuclear Flashes*,
R. Rosner, A. Calder, J. Dursi, B. Fryxell, D. Q. Lamb, J. C. Niemeyer, K. Olson, P. Ricker,
F. X. Timmes, J. Truran, H. Tufo, Y. Young, M. Zingale, E. Lusk, & R. Stevens
2000, *CiSE*, 2, 33.

Unrefereed Conference Proceedings

1. *Type Ia Supernovae: Advances in Large Scale Simulation*,
S. E. Woosley, A. S. Almgren, A. J. Aspden, J. B. Bell, D. Kasen, A. R. Kerstein, H. Ma,
A. Nonaka, & M. Zingale
2009, Proceedings of SciDAC 2009, *Journal of Physics: Conference Series*, 180, 012023.
2. *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.
3. *Type Ia supernovae*,
S. E. Woosley, A. Almgren, J. B. Bell, G. Glatzmaier, D. Kasen, A. R. Kerstein, H. Ma,
P. Nugent, F. Röpke, V. Sankaran, & M. Zingale
2007, Proceedings of SciDAC 2007, *Journal of Physics: Conference Series*, 78, 012081.
4. *MAESTRO: A Low Mach Number Stellar Hydrodynamics Code*,
A. S. Almgren, J. B. Bell, & M. Zingale
2007, Proceedings of SciDAC 2007, *Journal of Physics: Conference Series*, 78, 012085.
5. *New Approaches for Modeling Type Ia Supernovae*,
M. Zingale, A. S. Almgren, J. B. Bell, M. S. Day, C. A. Rendleman, & S. E. Woosley
2006, Proceedings of SciDAC 2006, *Journal of Physics: Conference Series*, 46, 385.
6. *The Physics of Flames in Type Ia Supernovae*,
M. Zingale, S. E. Woosley, J. B. Bell, M. S. Day, & C. A. Rendleman
2005, Proceedings of SciDAC 2005, *Journal of Physics: Conference Series*, 16, 405.
7. *Simulations of Rising Hydrodynamic and Magnetohydrodynamic Bubbles*,
P. M. Ricker, K. Robinson, L. J. Dursi, R. Rosner, A. C. Calder, M. Zingale, J. W. Truran,
T. Linde, A. Caceres, B. Fryxell, K. Olson, K. Riley, K. A. Siegel, & N. Vladimirova
2004, Proceedings of The Riddle of Cooling Flows in Galaxies and Clusters of Galaxies, held
in Charlottesville, VA, May 31 - June 4, 2003, Eds. T. Reiprich, J. Kempner, and N. Soker.

8. *Efficiency Gains from Time Refinement on AMR Meshes and Explicit Timestepping*,
L. J. Dursi & M. Zingale
2003, Adaptive Mesh Refinement—Theory and Applications, Proceedings of the Chicago Workshop on Adaptive Mesh Refinement Methods, Sept. 3-5, 2003 Series: Lecture Notes in Computational Science and Engineering, Vol. 41 Plewa, Tomasz; Linde, Timur; Weirs, V. Gregory (Eds.) 2005, XIV, 554
9. *Investigations of Pointwise Ignition of Helium Deflagrations on Neutron Stars*,
M. Zingale, S. E. Woosley, A. Cumming, A. Calder, L. J. Dursi, B. Fryxell, K. Olson, P. Ricker, R. Rosner, & F. X. Timmes
2002, 3D Stellar Evolution, ASP Conference Proceedings, Vol. 293, 22-26 July 2002 at UC Davis, Livermore, CA, Ed. by S. Turcotte, S. C. Keller, & R. M. Cavallo.
10. *Onset of Convection on a Pre-Runaway White Dwarf*,
L. J. Dursi, A. C. Calder, A. Alexakis, J. W. Truran, M. Zingale, B. Fryxell, P. Ricker, F. X. Timmes, & K. Olson
2002, Classical Nova Explosions: International Conference on Classical Nova Explosions. AIP Conference Proceedings, Vol. 637. Sitges, Spain, 20-24 May, 2002. Edited by M. Hernanz & J. Jose
11. *Mixing by Non-linear Gravity Wave Breaking on a White Dwarf Surface*,
A. C. Calder, A. Alexakis, L. J. Dursi, R. Rosner, J. W. Truran, B. Fryxell, P. Ricker, M. Zingale, K. Olson, F. X. Timmes, & P. MacNeice
2002, Classical Nova Explosions: International Conference on Classical Nova Explosions. AIP Conference Proceedings, Vol. 637. Sitges, Spain, 20-24 May, 2002. Edited by M. Hernanz & J. Jose
12. *Numerical Simulations of Thermonuclear Flashes on Neutron Stars*,
B. Fryxell, M. Zingale, F. X. Timmes, D. Q. Lamb, K. Olson, A. C. Calder, L. J. Dursi, P. Ricker, R. Rosner, J. W. Truran, P. MacNeice, & H. Tufo
2001, Nuclear Physics A, 688, 172.
13. *Quenching Processes in Flame-Vortex Interactions*,
M. Zingale, J. C. Niemeyer, F. X. Timmes, L. J. Dursi, A. C. Calder, B. Fryxell, D. Q. Lamb, K. Olson, P. Ricker, R. Rosner, J. W. Truran, & P. MacNeice
2001, 20th Texas Symposium on Relativistic Astrophysics, Austin, Texas, 10-15 Dec. 2000, Melville, NY: AIP Conference Proceedings, Vol. 586. Edited by J. C. Wheeler & H. Martel.
14. *Simulations of Astrophysical Fluid Instabilities*,
A. C. Calder, B. Fryxell, R. Rosner, L. J. Dursi, K. Olson, P. M. Ricker, F. X. Timmes, M. Zingale, P. MacNeice, & H. M. Tufo
2001, 20th Texas Symposium on Relativistic Astrophysics, Austin, Texas, 10-15 Dec. 2000, Melville, NY: AIP Conference Proceedings, Vol. 586. Edited by J. C. Wheeler & H. Martel.

15. *Adaptive Mesh Simulations Of Astrophysical Detonations Using the ASCI Flash Code*,
B. Fryxell, A. C. Calder, L. J. Dursi, D. Q. Lamb, P. MacNeice, K. Olson, P. M. Ricker,
R. Rosner, F. X. Timmes, J. W. Truran, H. M. Tufo, & M. Zingale
Proceedings of the VII International Workshop on Advanced Computing and Analysis
Techniques in Physics Research (ACAT 2000), Fermilab, October 16-20, 2000.
16. *Large-Scale Simulations of Clusters of Galaxies*,
P. M. Ricker, A. C. Calder, L. J. Dursi, B. Fryxell, D. Q. Lamb, P. MacNeice, K. Olson,
R. Rosner, F. X. Timmes, J. W. Truran, H. M. Tufo, & M. Zingale
Proceedings of the VII International Workshop on Advanced Computing and Analysis
Techniques in Physics Research (ACAT 2000), Fermilab, October 16-20, 2000.
17. *Helium Detonations on Neutron Stars*,
B. Fryxell, M. Zingale, F. X. Timmes, D. Q. Lamb, K. Olson, A. C. Calder, L. J. Dursi,
P. Ricker, R. Rosner, J. W. Truran, P. MacNeice, & H. Tufo
Proceedings of the 10th Workshop on "Nuclear Astrophysics", Ringberg Castle, Tegernsee,
Germany, March 20-25 2000.

Popular Press Features

Life-or-Death Question: How Supernovas Happen? NY Times, Nov. 9, 2004.

Physics Today cover, Feb. 2002.

Flash Upon a Neutron Star, American Scientist, Sept.-Oct. 2000, vol. 88, no. 5, p. 400.