

# Publication List

Michael Zingale

## Refereed Publications

*On the Nature of Turbulent Flames in Type Ia Supernovae,*

M. Zingale, S. E. Woosley, C. A. Rendleman, M. S. Day, & J. B. Bell  
2005, ApJ, in preparation.

*Low Mach Number Modeling of Type Ia Supernovae,*

A. S. Almgren, J. B. Bell, C. A. Rendleman, & M. Zingale  
2005, ApJ, in press.

*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.

*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.

*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.

*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.

*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.

*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.

*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.

*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.

*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.

*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.

*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.

*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.

*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. MaxNeice, & H. M. Tufo  
2002, ApJS, 142, 201.

*A Case Study in Application I/O on Linux Clusters,*

R. Ross, D. Nurmi, A. Cheng, & M. Zingale  
2001, technical paper, SC2001.

*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.

*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.

*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.

*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.

*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.

*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.

**Conference Proceedings***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.

*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

*Investigations of Pointise 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.

*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

*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

*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.

*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.

*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.

*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.

*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.

*Firecrackers of the Gods*, Discover Magazine, Vol. 21 No. 9 (September 2000)