

CURRICULUM VITAE

Alan Clark Calder

Mailing address:

Department of Physics and Astronomy
SUNY Stony Brook
Stony Brook, NY 11794-3800
E-mail: acalder@mail.astro.sunysb.edu

Nationality: U.S. Citizen

Education

Doctor of Philosophy in Physics, Vanderbilt University, August, 1997.

Dissertation: *Multidimensional Simulations of Core Collapse Supernovae Using Multigroup Neutrino Transport.*

Master of Science in Physics, Vanderbilt University, December, 1993.

Master of Science in Physics, Clemson University, August, 1991.

Thesis: *Visual Characterization of the Nodal Surfaces of Many-Fermion Systems.*

Bachelor of Science in Physics, University of the South, May 1989.

Honors Research Report: *Dielectric Properties of Puddings.*

Academic Positions

Assistant Professor, Department of Physics and Astronomy, SUNY Stony Brook, Fall 2007 – present.

Senior Research Scientist, Department of Physics and Astronomy, SUNY Stony Brook, Spring and Summer 2007.

Research Scientist, Department of Astronomy and Astrophysics, University of Chicago, 2001 – 2006.

Instructor, Liberal Arts Department, School of the Art Institute of Chicago, 2004 – 2006.

Guest Faculty, Mathematics and Computer Science Division, Argonne National Laboratory, 2000 – 2004.

Research Associate, Department of Astronomy and Astrophysics, University of Chicago, 1999 – 2001.

Research Associate, National Center for Supercomputing Applications, University of Illinois, 1997 – 1999.

Research Assistant, Department of Physics and Astronomy, Vanderbilt University, 1994 – 1997.

Consultant, Oak Ridge National Lab., 1995 – 1996.

Teaching Assistant, Department of Physics and Astronomy, Vanderbilt University, 1991 – 1993.

Research Assistant, Department of Physics and Astronomy, Clemson University, Spring and Summer of 1991.

Teaching Assistant, Department of Physics and Astronomy, Clemson University, 1989 – 1990.

Research Interests

Main Field: Theoretical Astrophysics

Other Fields of Experience: Quantum Monte Carlo, Many-Body Physics, Experimental Biophysics

Research Interests: Relativistic Astrophysics, Supernovae, Radiation Transport, Multidimensional Hydrodynamics, High Performance Computing, Validation, Scientific Visualization, Computational Science Education

Teaching Experience

PHY 599 *Graduate Seminar II*. Stony Brook University, Fall 2007
SCIENCE 3211 *The Search for Life in the Universe*. School of the Art Institute of Chicago, Spring 2006
SCIENCE 3211 *The Search for Life in the Universe*. School of the Art Institute of Chicago, Spring 2005
SCIENCE 3320 *Planetary Science*. School of the Art Institute of Chicago, Spring 2004

Affiliations and Honors

Judge, SC2005, SC2006 HPC Analytics Challenge
SC2000 Gordon Bell Prize, Special Category
Joseph Sheffield Memorial Society

Vanderbilt University:

Judge, Adventures in Supercomputing exposition, 1995
Vanderbilt Student Volunteers for Science, Group Leader 1994 – 1995
Vanderbilt Student Volunteers for Science, 1993 – 1994

Clemson University:

Sigma Pi Sigma
Society of Physics Students

University of the South:

Departmental Honors in Physics
Order of the Gownsmen
Sigma Pi Sigma
Society of Physics Students
Delta Kappa Epsilon National Fraternity – Tau Delta Chapter President, Fall 1988

Personal:

Eagle Scout, Awarded Fall 1985

Memberships in Professional Societies

American Astronomical Society
American Physical Society

Grants and Allocations

Principal Investigator, DOE HEP Solicitation # DE-PS02-07ER07-08, *Making the Standard Candle: A study of how the progenitor white dwarf modulates the peak luminosity of type Ia supernovae*. \$30,000, Sept. 1, 2007 - August 31, 2008.

Co-Investigator, DOE HEP Solicitation # LAB 07-08, *Making the Standard Candle: A study of how the progenitor white dwarf modulates the peak luminosity of type Ia supernovae*. \$30,000, Sept. 1, 2007 - August 31, 2008.

Co-Principal Investigator, 2007 Department of Energy Innovative and Novel Computational Impact on Theory and Experiment (INCITE) award, *Study of the Gravitationally Confined Detonation Mechanism for Type Ia Supernovae*, 2,500,000 processor hours on the NERSC HPC at LBNL.

Co-Investigator, Department of Energy (NNSA/FAC) Solicitation # DE-SC52-06NA26436, *Experimental Astrophysics on the Omega Laser*. \$360,014

Co-Principal Investigator, NSF AST Award 0507456, *Type Ia Supernovae: Simulations and Nucleosynthesis*, July 1, 2005 - June 30, 2008. \$217,661

Principal Investigator, NASA Project Columbia allocation, *The Application of an Interoperability Based Environment for Adaptive Meshes to Radiation-Hydrodynamic Models of Gamma-Ray Bursts*, 100,000 CPU hrs.

Principal Investigator, NASA Advanced Supercomputing Division allocation under High Performance Computing and Communications program (IBEAM project), 500,000 CPU hrs./yr. FY02, FY03, FY04.

Co-Investigator, Department of Energy (NNSA/FAC) Solicitation # DE-PS03-02SF22493, *Experimental Astrophysics on the Omega Laser*. 40 shots/year for FY03 and FY04.

Principal Investigator, NASA CAN-00-OES-01 Subcontract, *Development of an Interoperability Based Environment for Adaptive Meshes (IBEAM) with Applications to Radiation-Hydrodynamic Models of Gamma-Ray Bursts*. October 1, 2001 - September 30, 2004. \$228,024

Co-Investigator, NASA Cooperative Agreement Notice CAN-00-OES-01, *Development of an Interoperability Based Environment for Adaptive Meshes (IBEAM) with Applications to Radiation-Hydrodynamic Models of Gamma-Ray Bursts*. Selected for negotiation June 4, 2001. \$1.8M/3 yrs.

Principal Investigator, Partners for Advanced Computational Services Startup Allocation (NCSA), 4000 SU hours on the SGI-CRAY Origin2000, Awarded December 23, 1998

Refereed Publications

Three-Dimensional Simulations of the Deflagration Phase of the Gravitationally Confined Detonation Model of Type Ia Supernovae. G. C. Jordan IV, R. T. Fisher, D. M. Townsley, A. C. Calder, C. Graziani, S. M. Asida, D. Q. Lamb, and J. W. Truran. ApJL, submitted.

Flame Evolution During Type Ia Supernovae and the Deflagration Phase in the Gravitationally Confined Detonation Scenario. D. M. Townsley, A. C. Calder, S. M. Asida, I. Seitenzahl, F. Peng, N. Vladimirova, D. Q. Lamb, and J. Truran. ApJ, in press.

Tera-scale Turbulence Computation on BG/L Using the FLASH3 Code. R. Fisher, S. Abarzhi, K. Antypas, S. M. Asida, A. C. Calder, F. Cattaneo, P. Constantin, A. Dubey, I. Foster, J. B. Gallagher, M. K. Ganapathy, C.C. Glendenin, L. Kadanoff, D.Q. Lamb, S. Needham, M. Papka, T. Plewa, L.B. Reid, P. Rich, K. Riley, and D. Sheeler. IBM Journal of Research and Development, in press.

Capturing the Fire: Flame Energetics and Neutronization for Type Ia Supernovae. A. C. Calder, D. M. Townsley, O. E. B. Messer, I. Seitenzahl, F. Peng, E. F. Brown, N. Vladimirova, J. Truran, and D. Q.

Lamb. ApJ, **656**, 313, 2007

The Late-Time Behavior of the Single-mode Rayleigh-Taylor Problem. P. Ramaprabhu, G. Dimonte, A. C. Calder, and B. Fryxell, Phys. Rev. E, **74**, 066308, 2006

Scientific Applications on the Massively Parallel BG/L Machine. K. Antypas, A.C. Calder, A. Dubey, R. Fisher, M.K. Ganapathy, J.B. Gallagher, L.B. Reid, K. Riley, D. Sheeler, and N. Taylor, proc. Parallel and Distributed Processing Techniques and Applications (PDPTA '06)

Laboratory Astrophysics Experiments for Simulation Code Validation: A Case Study. A. C. Calder, Ap&SS, **298**, 25, 2005

Type Ia Supernovae: Simulations and Nucleosynthesis. E. F. Brown, A. C. Calder, T. Plewa, P. M. Ricker, K. Robinson, J. B. Gallagher. Nuclear Physics A, **758**, 451, 2005

Type Ia Supernova Explosion: Gravitationally Confined Detonation. T. Plewa, A. C. Calder, and D. Q. Lamb. ApJ, **612**, L37, 2004

On the Nonlinear Evolution of Wind-driven Gravity Waves. A. Alexakis, A. C. Calder, L. J. Dursi, R. Rosner. F. X. Timmes, B. Fryxell, M. Zingale, P. M. Ricker, and K. Olson. Phys. Fluids, **16**, No. 9, 3256, 2004

Validating Astrophysical Simulation Codes. A. C. Calder, L. J. Dursi, B. Fryxell, T. Plewa, V. G. Weirs, T. Dupont, H. F. Robey, J. O. Kane, R. P. Drake, B. A. Remington, G. Dimonte, J. Hayes, J. M. Stone, P. M. Ricker, F. X. Timmes, M. Zingale, and K. Olson. CiSE **6** No. 5, 10, 2004

A comparison of high-resolution 3D numerical simulations of turbulent Rayleigh-Taylor (RT) instability: Alpha-Group collaboration. G. Dimonte, D. 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, and M. Zingale. Phys. Fluids, **16**, No. 5, 1668, 2004

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, and K. Olson. ApJ, **602** 931, 2004

Morphology of Rising Hydrodynamic and Magneto-hydrodynamic Bubbles from Numerical Simulations. K. Robinson, L. J. Dursi, P. M. Ricker, R. Rosner. T. Linde, M. Zingale, A. C. Calder, B. Fryxell, J. W. Truran. F. X. Timmes, A. Caceres, K. Olson. K. Riley, A. Siegel, and N. Vladimirova. ApJ, **601** 621, 2004

The Response of Model and Astrophysical Thermonuclear Flames to Curvature and Stretch. L. J. Dursi, M. Zingale, A. C. Calder, B. Fryxell, F. X. Timmes, N. Vladimirova, R. Rosner. A. Caceres, D. Q. Lamb, K. Olson, P. M. Ricker, K. Riley, A. Siegel, and J. W. Truran. ApJ, **595** 955, 2003

Mapping 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, and N. Vladimirova. ApJS, **143** 539, 2002

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, and H. M. Tufo. *ApJS*, **143** 201, 2002

Numerical Models of Binary Neutron Star System Mergers II.: Coalescing Models with Post-Newtonian Radiation Reaction Forces. A. C. Calder and E. Y. M. Wang. *ApJ*, **570** 303, 2002

Interface Imprinting by a Rippled Shock Using an Intense Laser. J. O. Kane, H. F. Robey, B. A. Remington, R. P. Drake, J. Knauer, D. D. Ryutov, H. Louis, R. Teyssier, O. Hurricane, D. Arnett, R. Rosner, and A. Calder. *Phys. Rev. E*, **63**, 055401(R), 2001

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, and H. Tufo. *Nuclear Physics A*, **688** 172, 2001

Helium Detonations on Neutron Stars. M. Zingale, J. W. Truran, F. X. Timmes, B. Fryxell, D. Q. Lamb, K. Olson, A. C. Calder, L. J. Dursi, P. Ricker, R. Rosner, P. MacNeice, and H. Tufo. *ApJS*, **133** 195, 2001

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, J. W. Truran, H. M. Tufo, and M. Zingale. in *Proc. Supercomputing 2000*, IEEE Computer Soc. 2000, <http://sc2000.org> (Gordon Bell Prize)

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, H. Tufo, P. MacNeice, and R. Rosner. *ApJ*, **543** 938, 2000

Numerical Models of Binary Neutron Star System Mergers. I.: Numerical Methods and Equilibrium Data for Newtonian Models. F. D. Swesty, E. Y. M. Wang, and A. C. Calder. *ApJ*, **541** 937, 2000

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. W. Truran, H. Tufo, Y-N Young, M. Zingale, Ewing Lusk, and Rick Stevens. *CiSE*, **2** No. 2, 33, 2000

An Investigation of Neutrino-Driven Convection and the Core Collapse Supernovae Mechanism Using Multi-group Neutrino Transport. A. Mezzacappa, A. C. Calder, S. W. Bruenn, J. M. Blondin, M. W. Guidry, M. R. Strayer, and A. S. Umar. *ApJ*, **495** 911, 1998

The Interplay Between Protoneutron Star Convection and Neutrino Transport in Core Collapse Supernovae. A. Mezzacappa, A. C. Calder, S. W. Bruenn, J. M. Blondin, M. W. Guidry, M. R. Strayer, and A. S. Umar. *ApJ*, **493** 848, 1998

Visualization of the Local Contribution to the Nodal Surface of a Many-Fermion Wave Function. A. C. Calder, M. R. Curry, R. M. Panoff, and Y. J. Wong. *Phys. Rev. E*, **53**, 5450, 1996

Contributed Papers

New insights in to the single-mode Rayleigh-Taylor instability. P. Ramaprabhu, G. Dimonte, A. C. Calder, and B. Fryxell, in press, to appear in *proc. IWPCTM*, July 2006, Paris, France.

Type Ia Supernovae: Energetics, Neutronization, and Nucleosynthesis. J. W. Truran, A. C. Calder, D. M. Townsley, I. R. Seitenzahl, N. Vladimirova, D. Q. Lamb, and E. F. Brown. in *The Multicoloured Landscape of Compact Objects and their Explosive Origins*, L. Burderi et al. eds., AIP Conference Proceedings, Volume 924, 2007, pp. 203-209.

A Case Study of Verifying and Validating an Astrophysical Simulation Code. A. C. Calder, N. T. Taylor, K. Antypas, and D. Sheeler, in *Numerical Modeling of Space Plasma Flows: Astronom-2006 ASP Conference Series, Volume 359, Proceedings of the Conference Held 26-30 March, 2006*, in Palm Springs, California, USA. G.P. Zank and N.V. Pogorelov, eds. San Francisco: Astronomical Society of the Pacific., p. 119

FLASH: Applications and Future. K.B. Antypas, A. C. Calder, A. Dubey, J. B. Gallagher, J. Joshi, D. Q. Lamb, T. Linde, E. Lusk, O. E. B. Messer, A. Mignone, H. Pan, M. Papka, F. Peng, T. Plewa, P. M. Ricker, K. Riley, D. Sheeler, A. Siegel, N. Taylor, J. W. Truran, N. Vladimirova, G. Weirs, D. Yu, Z. Zhang. in *Parallel Computational Fluid Dynamics 2005: Theory and Applications*, eds. A. Deane, G. Brenner, A. Ecer, D. R. Emerson, J. McDonough, J. Periaux, N. Satofuka, D. Tromeur-Dervout. Elsevier, Amsterdam, 2006, p. 325

Deflagrations Evolved from an Off-Center Ignition. J. W. Truran, A. C. Calder, T. Plewa, N. Vladimirova, and D. Q. Lamb, in *Proc. of the 12th Workshop on Nuclear Astrophysics (Ringberg Castle, March 22-27, 2004)*, MPA/P14, eds. E. Müller and Hans-Thomas Janka, Garching, 2004, p. 96

Breaking Gravity Waves: A Mechanism for Nova Enrichment. A. C. Calder, A. Alexakis, A. Heger, E. F. Brown, L. J. Dursi, J. W. Truran, R. Rosner, and J. Jose, in *Proc. of the 12th Workshop on Nuclear Astrophysics (Ringberg Castle, March 22-27, 2004)*, MPA/P14, eds. E. Müller and Hans-Thomas Janka, Garching, 2004, p. 69

Simulations of Rising Hydrodynamic and Magnetohydrodynamic Bubbles. P. M. Ricker, K. Robinson, L. J. Dursi, R. Rosner, T. Linde, M. Zingale, A. C. Calder, B. Fryxell, T. Plewa, J. W. Truran, A. Caceres, K. Olson, K. Riley, A. Siegel, N. Vladimirova. In *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. Published electronically at <http://www.astro.virginia.edu/coolflow/>

A Case Study of Verifying and 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, A. Siegel A. Caceres, K. Riley, N. Vladimirova, P. Ricker, F. X. Timmes, K. Olson, and H. M. Tufo. Prepared for Foundations 2002, October 22-23, 2002 <http://www.trainingsystems.org/events/31V0>

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, and F. X. Timmes in *3-d Stellar Evolution*, eds. S Turcotte, S. Keller, and R. Cavallo, ASP conference proceedings vol. 293, ASP, San Francisco, 2003, p. 329

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, and K. Olson. in *Classical Nova Explosions*, eds. M. Hernanz and J. Jose, AIP, Melville, 2002, p. 139

Mixing by Non-linear Wave Breaking at the Surface of a White Dwarf. A. C. Calder, A. Alexakis, L. J. Dursi, R. Rosner, J. W. Truran, B. Fryxell, P. Ricker, M. Zingale, K. Olson, F. X. Timmes, and P. MacNeice. in *Classical Nova Explosions*, eds. M. Hernanz and J. Jose, AIP, Melville, 2002, p. 134

Mixing by Wave Breaking at the Surface of a White Dwarf. J. W. Truran, A. Alexakis, L. J. Dursi, A. C. Calder, M. Zingale, B. Fryxell, P. Ricker, F. X. Timmes, R. Rosner, and K. Olson, in *Proc. of the 11th Workshop on Nuclear Astrophysics (Ringberg Castle, February 11-16, 2002)*, MPA/P13, eds. W. Hillebrandt and E. Müller, Garching, 2002, p. 186

A Semi-analytic Model for the Radiation Reaction Luminosity for post-Newtonian Binary Neutron Star Mergers. F. D. Swesty and A. C. Calder. in *Relativistic Astrophysics*, eds. J. C. Wheeler and H. Martel, AIP, Melville, 2001, p. 808

Coalescing Binary Neutron Star Systems. A. C. Calder, F. D. Swesty, and E. Y. M. Wang. in *Relativistic Astrophysics*, eds. J. C. Wheeler and H. Martel, AIP, Melville, 2001, p. 796

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. M. Ricker, R. Rosner, and P. MacNeice. in *Relativistic Astrophysics*, eds. J. C. Wheeler and H. Martel, AIP, Melville, 2001, p. 490

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, and H. M. Tufo. in *Relativistic Astrophysics*, eds. J. C. Wheeler and H. Martel, AIP, Melville, 2001, p. 484

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. in *Proceedings of the VII International Workshop on Advanced Computing and Analysis Techniques in Physics Research (ACAT 2000)*, P. C. Bhat and M. Kasemann, eds. AIP Press, Melville, 2001, p. 223

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. in *Proceedings of the VII International Workshop on Advanced Computing and Analysis Techniques in Physics Research (ACAT 2000)*, P. C. Bhat and M. Kasemann, eds. AIP Press, Melville, 2001, p. 316

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, and H. Tufo. in *Proc. of the Sixth International Conference on Nuclei in the Cosmos, Aarhus, Denmark, 27 June - 1 July, 2000.* ed. J. Christensen-Dalsgaard and K. Langanke, Elsevier, Amsterdam 2001, p. 172c

What is 29 Doradus? J. R. Dickel, J. B. Kaler, A. C. Calder, R. F. Webbink, E. Olszewski, D. Welch, E. C. Olson, N. L. Romero, and D. F. Bright. *Mercury*, **29** No. 5, 38, 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, and H. Tufo. in *Proc. of the 10th Workshop on Nuclear Astrophysics (Ringberg Castle, March 20-25, 2000)*, MPA/P12, eds. W. Hillebrandt and E. Müller, Garching, 2000, p. 38

Numerical Models of Newtonian and Post-Newtonian Binary Neutron Star Mergers. E. Y. M. Wang, F. D. Swesty, and A. C. Calder, in *Stellar Evolution, Stellar Explosions, and Galactic Chemical Evolution*, ed. A. Mezzacappa, IOP Publishing Ltd, Bristol, 1998, p. 723

Numerical Methods for Modeling Binary Neutron Star Systems. A. C. Calder, F. D. Swesty, and E. Y. M. Wang, in *Stellar Evolution, Stellar Explosions, and Galactic Chemical Evolution*, ed. A. Mezzacappa, IOP Publishing Ltd, Bristol, 1998, p. 715