

Publications – October 17, 2004

1. M. A. Christon, P. Burns, R. Sommerfeld, and E. Thompson, *Acid Deposition in Colorado - A Potential or Current Problem*, ch. A 2-D Finite Element Simulation of Temperature Gradient Metamorphism, pp. 57–69. Cooperative Institute for Research in the Atmosphere, Colorado State University, Ft. Collins, Colorado, 1986. (ISSN no. 0737-5353-6).
2. M. A. Christon, “A finite element model of temperature gradient metamorphism in dry snow,” Master’s thesis, Colorado State University, Ft. Collins, Colorado, May 1986.
3. M. A. Christon, P. Burns, and R. Sommerfeld, “A 2-D simulation of heat and mass transport in dry snow,” in *Heat Transfer in Geophysical and Geothermal Systems*, pp. 1–8, ASME HTD, vol. 76, August 1987.
4. M. A. Christon, P. Burns, R. Sommerfeld, and E. Thompson, *NATO ASI Series C: Proceedings on Seasonal Snow-covers: Physics, Chemistry, Hydrology*, vol. C-211, ch. Water Vapor Transport in Snow, A 2-D Simulation of Temperature Gradient Metamorphism, pp. 37–62. Dordrecht, Holland: D. Reidel Publishing, July 1987.
5. P. J. Burns, M. A. Christon, R. Schweitzer, O. M. Lubeck, H. J. Wasserman, M. L. Simmons, and D. V. Pryor, “Vectorization of Monte Carlo particle transport: An architectural study using the LANL benchmark: GAMTEB,” in *Supercomputing ’89*, pp. 10–20, IEEE Computer Society, November 1989.
6. M. A. Christon, P. Burns, and R. Sommerfeld, “A 2-D microscopic simulation of heat and mass transport in dry snow,” *Chemical Engineering Communications*, vol. 87, pp. 87–105, 1990.
7. M. A. Christon, *A 3-D Transient Microanalysis of Multi-phase Heat and Mass Transport in Ice Lattices*. PhD thesis, Colorado State University, Ft. Collins, Colorado, May 1990.
8. P. J. Burns, J. D. Maltby, and M. A. Christon, “Surface to surface transport for photons and electrons via Monte Carlo,” *Computing Systems in Engineering*, vol. 1, no. 1, pp. 75–99, 1990.
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10. M. A. Christon, “A vectorized 3-D finite element model for transient simulation of two-phase heat transport with phase transformation and a moving interface,” in *IEEE Supercomputing ’90*, (New York), pp. 436–445, IEEE, November 1990.

11. M. A. Christon and T. Spelce, *Engineering Research, Development and Technology, Section 2*, vol. Section 2, ch. Visualization of High Resolution, Three-Dimensional, Nonlinear Finite Element Analyses, pp. 29–33. Livermore, California: Lawrence Livermore National Laboratory, UCRL-53868-91 ed., 1991.
12. M. A. Christon, *Engineering Research, Development and Technology, Section 2*, vol. Section 2, ch. Enhancement and Quality Assurance for INGRID, pp. 34–36. Livermore, California: Lawrence Livermore National Laboratory, UCRL-53868-91 ed., 1991.
13. M. A. Christon and R. Whirley, *The 1991 MPCI Yearly Report*, ch. Explicit Structural Analysis in a Concurrent Computing Environment. Lawrence Livermore National Laboratory, UCRL-ID-10722 ed., 1991.
14. C. Hoover, M. A. Christon, R. Whirley, and A. J. De Groot, *The 1992 MPCI Yearly Report*, ch. Explicit Nonlinear Structural Dynamics Models for Massively Parallel Computers. Lawrence Livermore National Laboratory, UCRL-ID-10722-92 ed., 1992.
15. M. A. Christon and D. Dovey, “INGRID, A 3-D mesh generator for modeling nonlinear systems - User Manual,” Tech. Rep. UCRL-MA-109790, Lawrence Livermore National Laboratory, Livermore, California, September 1992.
16. M. A. Christon and T. E. Spelce, “Visualization of high resolution three-dimensional nonlinear finite element analyses,” in *Visualization '92*, (Boston, MA), pp. 324–331, IEEE, 1992. (LLNL UCRL-JC-110110).
17. M. A. Christon, *Engineering Research, Development and Technology, Section 2*, vol. Section 2, ch. HYDRA: A Flow Solver for Three-Dimensional, Transient, Incompressible, Viscous Flow, pp. 19–21. Livermore, California: Lawrence Livermore National Laboratory, UCRL-53868-92 ed., 1992.
18. M. A. Christon, “PING: An explicit finite element code for linear structural acoustics - user manual,” Tech. Rep. UCRL-MA-114536, Lawrence Livermore National Laboratory, May 1993.
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34. M. A. Christon, D. A. Crawford, E. S. Hertel, J. S. Peery, and A. C. Robinson, *Supercomputer 1997*, FOKUS Praxis Information und Kommunikation, ch. ASCI Red - Experiences and lessons learned with a massively parallel TeraFLOP Supercomputer, pp. 12–30. Munich, Germany: K.G. Saur, June 1997. (*invited paper*).
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39. M. A. Christon, D. W. Roach, and T. E. Voth, "The numerical performance of wavelets and reproducing kernels for PDE's," in *International Conference on Computational Engineering Science* (S. N. Atluri and P. E. O'Donoghue, eds.), (Atlanta, Georgia), pp. 29–34, Tech Science Press, October 1998.
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45. M. A. Christon, “Dealing with pressure – solution strategies for the time-dependent navier-stokes equations,” *International Journal for Numerical Methods in Fluids*, vol. 38, pp. 1177–1198, 2002.
46. M. A. Christon, “The new incompressible flow capabilities in LS-DYNA,” in *6th International LS-DYNA Users Conference 2000*, (Dearborn, Michigan), April 2000.
47. M. A. Christon and G. O. Cook, Jr., *LS-DYNA’s Incompressible Flow Solver – User’s Manual*. Livermore Software Technology Corporation, 7374 Las Positas Road, Livermore California 94550, USA, October 2000.
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53. K. H. Brown, S. P. Burns, and M. A. Christon, “Coupled Eulerian-Lagrangian methods for earth penetrating weapon applications,” Tech. Rep. SAND2002-1014, Sandia National Laboratories, Albuquerque, New Mexico, May 2002.

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55. M. A. Christon, M. J. Martinez, and T. E. Voth, "Generalized Fourier analysis of the advection-diffusion equation – part I: One-dimensional domains," *International Journal for Numerical Methods in Fluids*, vol. 45, pp. 839–887, 2004.
56. T. E. Voth, M. J. Martinez, and M. A. Christon, "Generalized Fourier analysis of the advection-diffusion equation – part II: Two-dimensional domains," *International Journal for Numerical Methods in Fluids*, vol. 45, pp. 889–920, 2004.
57. M. A. Christon, D. I. Ketcheson, and A. C. Robinson, "An assessment of semi-discrete central schemes for hyperbolic conservation laws," sand2003-3238, Sandia National Laboratories, Albuquerque, New Mexico, May 2003.
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60. P. Bochev, M. Christon, S. Collis, R. Lehoucq, J. Shadid, A. Slepoy, and G. Wagner, "A mathematical framework for multiscale science and engineering: the variational multiscale method and interscale transfer operators," sand2004-2871, Sandia National Laboratories, Albuquerque, New Mexico, 2004.
61. M. A. Christon and R. S. Patil, "A finite element projection method for low-Mach number reacting flows," in *Third MIT Conference on Computational Fluid and Solid Mechanics* (K. J. Bathe, ed.), (New York), Elsevier, June 2005. (SAND 2004-5280C).

Non-traditional Publications

1. M. A. Christon, P. Burns, R. Sommerfeld, "CRAY CHANNELS - User News," Color Images for User News article in *CRAY CHANNELS Magazine*, pp. 34-35, Winter Edition, 1989.
2. M. A. Christon, R. Schweitzer, E. Thigpen, "Cover Story - Going with the Flow," Cover and Cover Story for *Supercomputing Review*, pp. 4-5, February, 1989.
3. M. A. Christon, P. Burns, "The Underworld of Ice, Three Dimensional Microanalysis of Temperature Gradient Metamorphism," *Projects in Scientific Computing 1989-90*, Pittsburgh Supercomputing Center, pp. 34-35, 1990.
4. M. A. Christon, "Avalanches and Thermal Gradients in Depth Hoar," *pixel*, March/April issue, pp. 9-10, 1991.

5. M. A. Christon, *International Journal for Numerical Methods in Fluids*, cover image of HYDRA results for cylinder vortex shedding at a Reynolds number of 250, 1994.

Invited Lectures

1. "DYNA for Fluids: A Transient Incompressible Viscous Flow Solver," presented to Warren P. Chernock, Deputy Science & Technology Advisor, DOE LDRD Review, Lawrence Livermore National Laboratory, Livermore, CA, August 5, 1993.
2. "PING: A Time Domain Approach to Structural Acoustics," invited lecture presented to the working group on Finite Element Methodologies and Materials Processing Fundamentals, Army High Performance Computing Research Center, University of Minnesota, Minneapolis, Minnesota, October 28, 1993.
3. "Scientific Visualization Methods for High Resolution, Three-Dimensional, Finite Element Simulations," invited keynote lecture, *DFG-Workshop on Visualization*, Paderborn, Germany, January 18-21, 1994.
4. "Unstructured Mesh Visualization Methods for Finite Element Simulations," invited lecture, *NAS New Technology Seminar*, NASA Ames Research Center, Moffet Field, CA, March 29, 1994.
5. "Time Domain Structural Acoustics using Implicit-Explicit Partitioning," invited lecture, *ONR Structural Acoustics Program Review*, Florida Atlantic University, Boca-Raton, Florida, January 9-12, 1995.
6. "ASCI Red - Experiences and lessons learned with a massively parallel TeraFLOP supercomputer," *Supercomputer '97 Seminar - Mannheim*, University of Mannheim, Mannheim, Germany, June 19-21, 1997.
7. "The div, grad and two projections – parallel solution methods for low-speed flows," *Computational Mechanics Colloquia*, Mechanical Engineering, Northwestern University, Evanston, IL, May 30, 1998.
8. "From submarines to plumes – exact and approximate projection methods for incompressible flow", *Graduate Student Seminar Series*, Mechanical Engineering, University of New Mexico, Albuquerque, NM, October 12, 1999.
9. "LS-DYNA – Application driven strategies for high-performance computing," SC2000, Dallas, TX, November 9, 2000.
10. "The div and two projections – High-performance solution methods for incompressible and low-Mach flows", *Applied Mathematics Colloquia*, Mathematics Department, Colorado State University, Ft. Collins, CO, April 4, 2002.

Selected Presentations

1. "Water Vapor Transport in Snow, A 2-D Simulation of Temperature Gradient Metamorphism," *NATO Advanced Study Institute on the Chemical Dynamics of Seasonal Snowcovers*, Les Arcs, France, July 13-25, 1986.
2. "A 2-D Finite Element Simulation of Temperature Gradient Metamorphism," *CIRA Workshop on Acid Deposition in Colorado*, Pingree Park, Colorado, August 13-15, 1986.
3. "A 2-D Simulation of Heat and Mass Transport in Dry Snow," *Heat Transfer in Dry Snow*, session on *Heat Transfer in Geophysical Media*, 24th ASME/AIChE National Heat Transfer Conference, Pittsburgh, Pennsylvania, August 9-12, 1987.
4. "Three Dimensional Calculations for Temperature Gradient Metamorphism in Dry Snow," *American Geophysical Union Fall Meeting*, San Francisco, California, December 7-11, 1987.
5. "Temperature Gradient Metamorphism in Dry Snow, A Mechanism for Impurity Distribution," *Front Range American Geophysical Union Meeting*, Golden, Colorado, February 13-14, 1989.
6. "3-D Numerical Microanalysis of Metamorphosing Snow Strata," *American Geophysical Union Fall Meeting*, San Francisco, California, December 4-8, 1989.
7. "3-D Transient Microanalysis of Multi-phase Heat and Mass Transport in Dry Snow," *AIAA/ASME Thermophysics and Heat Transfer Conference*, Seattle, Washington, June 18-20, 1990.
8. "A Vectorized 3-D Finite Element Model for Transient Simulation of Two-Phase Heat Transport with Phase Transformation and a Moving Interface," *ACM Supercomputing '90*, New York, New York, November 12-16, 1990.
9. "3-D Visualization Techniques for Finite Difference and Finite Element Modeling," *1990 CUBE Symposium*, Santa Fe, New Mexico, November 27-30, 1990. (See: LLNL UCRL-JC-104153)
10. "Scientific Rendering and Grid Generation," presented to LLNL Engineering Computational Analysts Users Group, May 23, 1991.
11. "INGRID: A 3-D Mesh Generator for Modeling Nonlinear Systems," presented to General Motors Research, February 26, 1992.
12. "Animation for High Resolution, Three Dimensional, Nonlinear Finite Element Analyses," *1992 CUBE Symposium*, Pleasanton, California, October 27-30, 1992. (See: LLNL UCRL-JC-110634)

13. "Implementation Strategies for a Three-Dimensional, Transient Incompressible Viscous Flow Solver on Vector and Parallel Supercomputers," *Symposium on Parallel Finite Element Computations*, Army High Performance Computing Research Center, University of Minnesota, Minneapolis, Minnesota, October 25-27, 1994.
14. "A Mixed Time Integration Method for Large Scale Acoustic Fluid-Structure Interaction," presented at: *Winter Annual Meeting of the ASME*, Chicago, Illinois, November 6-11, 1994.
15. "Computational Fluid Dynamics Algorithms for Fire Simulation - Preliminary Jet and Plume Calculations," Accelerated Strategic Computing Initiative - PI Meeting, Vandenberg Air Force Base, California, November 6, 1996.
16. "I/O Issues for Unstructured-Grid Applications", Accelerated Strategic Computing Initiative - Scalable I/O Workshop, Livermore, California, March, 1997.