

Elbridge Gerry Puckett

Department of Mathematics
University of California
Davis, California 95616
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Professional Preparation

Lawrence Livermore National Laboratory (LLNL)	DOE Applied Mathematical Sciences Postdoctoral Fellow	1987–1990
University of California, Berkeley	PhD Mathematics	1987
Sonoma State University	BA Mathematics cum laude	1981

Appointments

1998–2001	Chair, Graduate Group in Applied Mathematics, U.C. Davis
1997–1998	NSF University-Industry Cooperative Research Fellowship in the Mathematical Sciences, Xerox Corporate Research Center, Webster, NY
1997–	Professor, Department of Mathematics, U.C. Davis
Spring 1995	Hudnell Distinguished Lecturer, Department of Geophysical Sciences, University of Chicago
1993–1997	Associate Professor, Department of Mathematics, U.C. Davis
1990–1995	Consultant, Applied Mathematics Group, LLNL
1990–1993	Assistant Professor, Department of Mathematics, U.C. Davis
Summer 1992	Research Fellow, Institute of Fluid Science, Tohoku University Sendai, Japan
Fall 1990	Research Fellow, Centre for Math Analysis, Australian National University, Canberra, Australia
1987–1990	DOE Applied Mathematical Sciences Postdoctoral Fellow, LLNL
1986–1987	Physicist, Computational Physics Division, LLNL

Postdocs and Graduate Students

Postdocs

	<u>Current Position</u>	<u>Employer</u>
Dr. Ying He	2014–2017 Algorithm Engineer	KLA-Tencor, Milpitas, CA
Prof. Mark Sussman	1996–1999 Professor of Mathematics	Florida State University
Dr. Igor Aleinov	1996–1999 Associate Research Scientist	NASA Goddard Institute for Space Studies, Columbia University

PhD Students

Dr. Sarah Ann Williams	2004–2007 Mathematics Instructor	Foothill College, Los Altos Hills, CA
Dr. Matthew Wayne Williams	1995–2000 Technical Staff Member	Los Alamos National Laboratory
Dr. James Edward Pilliod	1992–1996 Applied Numerical Algorithms Group [‡]	Lawrence Berkeley Laboratory (LBL)

Masters Students

Christopher Aldo Algieri	2003–2005 Computational Research Division [‡]	LBL
Rita Maria Hurst	1993–1995 CARL Corporation [‡]	Denver, CO
James Edward Pilliod	1991–1992 Applied Numerical Algorithms Group [‡]	LBL

[‡]Last Known Position

Selected Publications

Five Most Influential Publications Based on Citations¹

1. M. M. Sussman[†] and E. G. Puckett (2000) “A Coupled Level Set and Volume-of-Fluid Method for Computing 3D and Axisymmetric Incompressible Two-Phase Flows”, *J. Comput. Phys.* **162**(2):301–337 DOI 10.1006/jcph.2000.6537 (1297 Citations) [View Article](#)
2. E. G. Puckett and J. E. Pilliod* (2004) “Second-Order Accurate Volume-of-Fluid Algorithms for Tracking Material Interfaces”, *J. Comput. Phys.* **199**(2):465–502 DOI 10.1016/j.jcp.2003.12.023 (545 Citations) [View Article](#)
3. E. G. Puckett, A. S. Almgren, J. B. Bell, D. L. Marcus[†], and W. J. Rider (1997) “A High-Order Projection Method for Tracking Fluid Interfaces in Variable Density Incompressible Flows” *J. Comput. Phys.* **130**(2):269-282 DOI 10.1006/jcph.1996.5590 (528 Citations) [View Article](#)
4. G. H. Miller and E. G. Puckett (1996) “A High-Order Godunov Method for Multiple Condensed Phases” *J. Comput. Phys.* **128**(1):134–164 DOI 10.1006/jcph.1996.0200 (203 Citations) [View Article](#)
5. J. J. Helmsen[†], E. G. Puckett, P. Colella, and M. Dorr (1996) “Two new methods for simulating photolithography development in 3D”, *Optical Microlithography IX*, Proceedings of SPIE’s 1996 International Symposium on Microlithography **2726**:253-262, DOI 10.1117/12.240959 (153 Citations) [View Article](#)

Five Other Significant Publications

6. E. G. Puckett (2013) “On the Second-Order Accuracy of Volume-of-Fluid Interface Reconstruction Algorithms II: An Improved Constraint on the Cell Size”, *Comm. App. Math. Comput. Sci.* **8**(1):123–158 DOI 10.2140/camcos.2013.8.123 [View Article](#)
7. L. F. Henderson and E. G. Puckett (2014) “The Refraction of Shock Pairs” *Shock Waves ‘An International Journal on Shock Waves, Detonations and, Explosions’* **24**(6):553–572 DOI 10.1007/s00193-014-0513-8 [View Article](#)
8. E. G. Puckett, L. F. Henderson and P. Colella (1995) “A General Theory of Anomalous Shock Refraction”, in R. Brun and L. Z. Dumitrescu (Eds) *Shock Waves @ Marseille IV* Proceedings of the 19th International Symposium on Shock Waves, Marseille, France, July 26-30, 1993 Springer, pp. 139–144 DOI 10.1007/978-3-642-79532-9_22 [View Article](#)
9. Y. He[†], E. G. Puckett, and M. I. Billen (2017) “A Discontinuous Galerkin Method with a Bound Preserving Limiter for Stable Advection of non-Diffusive Fields in Solid Earth Geodynamics”, *Phys. Earth. Planet. In.*, **263**:23-37, DOI 10.1016/j.pepi.2016.12.001 [View Article](#)
10. R. Gassmoeller[†], H. Lokavarapu[@], E. Heien, E. G. Puckett, and W. Bangerth, (2018) “Flexible and scalable particle-in-cell methods with adaptive mesh refinement for geodynamic computations”, *Geochemistry, Geophysics, Geosystems* (to appear) [View Article](#)

[@]Undergraduate Student

*Graduate Student

[†]Postdoctoral Scholar

¹Citations from Google Scholar as of Thursday, August 16, 2018

Selected Professional Activities (After Promotion to Full Professor on July 1, 1997)

2016–	Member	Computational Infrastructure for Geodynamics (CIG) Computational Science Working Group CIG is an NSF funded, community-driven, organization that advances Earth science by developing and disseminating software for geophysics and related fields. Members of CIG Science Working Groups are appointed by the Executive Committee and provide domain expertise to the Science Steering Committee advising the group on software development setting priorities and recommending future directions.
2016–	Member	Deep Carbon Observatory
2013–	Member	American Geophysical Union (AGU)
2012-2013	Member	Two hiring committees for CIG Staff Scientists.
1997–	Reviewer & Panelist	DOE & NSF Grant Proposals
1997–	Reviewer	Shock Waves ‘An International Journal on Shock Waves, Detonations and, Explosions’ (Springer), Journal of Fluid Mechanics, Journal of Computational Physics, American Society of Mechanical Engineers (ASME) Journal, International of Numerical Methods in Fluids, Numerical Methods for Partial Differential Equations, Computers and Fluids, ...
Jul. 12–16, 2010	Co-organizer	Minisymposium on “Analysis and Application of Numerical Methods for Multi-phase Flow”, SIAM Annual Meeting, Pittsburgh, PA
2005–2006	Consultant	Hydrologic Engineering Center, U.S. Army Corps of Engineers (pro bono)
2002-2003	Reviewer	Cambridge University Press Book manuscript
May–Sept. 2002	Consultant	Applied Numerical Algorithms Group at the Lawrence Berkeley Laboratory
2000-2001	“Discussor”	Invited by the Office of Naval Research to be the discussor of the paper The Numerical Simulation of Ship Waves Using Cartesian Grid Methods presented at the 23rd Symposium on Naval Hydrodynamics held in Val de Reuil, France, September 17-22, 2000
Jul. 09–13, 2001	Co-organizer	Minisymposium on “Numerical methods for multi-phase /multi-fluid flow”, SIAM Annual Meeting, San Diego, CA
Jan. 10–13, 2001	Co-chair	Conference on “Analysis and Modeling of Industrial Jetting Processes” Institute for Mathematics and its Applications, University of Minnesota
Oct. 12–14, 2000	Panelist & Invited Speaker	“Can industrial internships improve graduate education in mathematics?” SIAM Northwest Regional Mathematics in Industry Workshop, University of Washington
June 15-17, 1998	Co-chair	Conference on Advances in Applied and Computational Mathematics Mathematical Sciences Research Institute, Berkeley, CA (Alexandre Chorin’s 60th Birthday Celebration)
1997-1998	Reviewer	Book review for “SIAM (Society of Industrial a Applied Mathematics) Review”
Jul. 12–18, 1997	Co-organizer	Minisymposium on “Numerical Methods for Solving Free-Boundary Problems” SIAM Annual Meeting, Stanford University
1997-1998	Examiner	Outside examiner for a PhD thesis in the Department of Chemical Engineering, University of Melbourne, Australia.

Publication List

Refereed Journal Publications

Submitted

- J. M. Robey* and E. G. Puckett (2018) “Implementation of a Volume-of-Fluid Method in a Finite Element Code with Applications to Thermochemical Convection in a Density Stratified Fluid in the Earth’s Mantle” Special issue of *Computers and Fluids* on Moving Boundaries (Ms. Ref. No.: CAF-D-18-0005) [View Original Submission](#)
- C. Thieulot and E. G. Puckett (2018) “Incompressible Stokes flow in an annulus: An analytical solution and numerical benchmark”, *Computers and Geosciences* (Submission no: CAGEO_2018_466) [View Manuscript](#)

Accepted

- R. Gassmoeller, H. Lokavarapu[®], E. Heien, E. G. Puckett, and W. Bangerth, (2018) “Flexible and scalable particle-in-cell methods with adaptive mesh refinement for geodynamic computations”, *Geochemistry, Geophysics, Geosystems* manuscript 2018GC007508R [View Accepted Manuscript](#)

Appeared

- E. G. Puckett, D. L. Turcotte, L. H. Kellogg, Y. He[†], J. M. Robey*, and H. Lokavarapu[®] (2018) “New numerical approaches for modeling thermochemical convection in a compositionally stratified fluid”, Special issue of *Physics of the Earth and Planetary Interiors* associated with the 15th Studies of the Earth’s Deep Interior (SEDI) Symposium (*Phys. Earth. Planet. In.*) **276**:10–35, 10.1016/j.pepi.2017.10.004 [View Article](#)
- Y. He[†], E. G. Puckett, and M. I. Billen (2017), “A Discontinuous Galerkin Method with a Bound Preserving Limiter for Stable Advection of non-Diffusive Fields in Solid Earth Geodynamics”, *Phys. Earth. Planet. In.*, **263**:23-37, 10.1016/j.pepi.2016.12.001 [View Article](#)
7. L. F. Henderson and E. G. Puckett (2014) “The Refraction of Shock Pairs” *Shock Waves ‘An International Journal on Shock Waves, Detonations and, Explosions’* **24**(6):553–572 DOI 10.1007/s00193-014-0513-8 [View Article](#)
- E. G. Puckett (2013) “On the Second-Order Accuracy of Volume-of-Fluid Interface Reconstruction Algorithms II: An Improved Constraint on the Cell Size”, *Comm. App. Math. Comput. Sci.* **8**(1):123–158 DOI 10.2140/camcos.2013.8.123 [View Article](#)
- G. H. Miller and E. G. Puckett (2013) “A Neumann–Neumann preconditioned iterative substructuring approach for computing solutions to Poisson’s equation with prescribed jumps on an embedded boundary” *J. Comput. Phys.* **235**(1):683-700, <https://doi.org/10.1016/j.jcp.2012.10.023> [View Article](#)
- E. G. Puckett (2010) “A Volume-of-Fluid Interface Reconstruction Algorithm that is Second-Order Accurate in the Max Norm”, *Comm. App. Math. Comput. Sci.* **5**(2):199–220. [View Article](#)
- E. G. Puckett (2010) “On the Second-Order Accuracy of Volume-of-Fluid Interface Reconstruction Algorithms: Convergence in the Max Norm” *Comm. Appl. Math. Comput. Sci.* **5**(1):99–148. [View Article](#)
- E. G. Puckett and J. E. Pilliod (2004) “Second-Order Accurate Volume-of-Fluid Algorithms for Tracking Material Interfaces”, *J. Comput. Phys.* **199**(2):465–502. [View Article](#)

- M. M. Sussman[†] and E. G. Puckett (2000) “A Coupled Level Set and Volume-of-Fluid Method for Computing 3D and Axisymmetric Incompressible Two-Phase Flows”, *J. Comput. Phys.* **162**(2):301–337. [View Article](#)
- E. G. Puckett (1997) Introduction to “A Numerical Method for Solving Incompressible Viscous Flow Problems” This was an invited paper for a special issue of *J. Comput. Phys.* **135**(2):115-117. [View Article](#)
- E. G. Puckett, A. S. Almgren, J. B. Bell, D. L. Marcus, and W. J. Rider (1997) “A High-Order Projection Method for Tracking Fluid Interfaces in Variable Density Incompressible Flows” *J. Comput. Phys.* **130**(2):269-282. [View Article](#)
- G. H. Miller and E. G. Puckett (1996) “A High-Order Godunov Method for Multiple Condensed Phases” *J. Comput. Phys.* **128**(1):134–164 [View Article](#)
- G. H. Miller and E. G. Puckett (1994) “Edge Effects in Molybdenum-Encapsulated Molten Silicate Shock Wave Targets” *J. Appl. Phys.* **75**(3):1426-1434 DOI 10.1063/1.356424 [View Article](#)
- E. G. Puckett and J. S. Saltzman (1992) “A 3D Adaptive Mesh Refinement Algorithm for Multimaterial Gas Dynamics” *Physica D*, **60**:84–104 [View Article](#)
- L. F. Henderson, P. Colella and E. G. Puckett (1991) “On the Refraction of Shock Waves at a Slow–Fast Gas Interface” *J. Fluid Mech.* **224**:1–27 [View Article](#)
- S. B. Baden and E. G. Puckett (1990) “A fast vortex method for computing 2D viscous flow” *J. Comput. Phys.* **91**(2):278-297. [View Article](#)
- E. G. Puckett (1989) “A study of the vortex sheet method and its rate of convergence” *SIAM J. Sci. and Stat. Comput.* **10**(2):298–327 DOI 10.1137/0910020 [View Article](#)
- E. G. Puckett (1989) “Convergence of a random particle method to solutions of the Kolmogorov equation $u_t = \nu u_{xx} + u(1 - u)$ ” *Math. Comput.* **52**(186):615-645. [View Article](#)

Invited Book Chapters

- E. G. Puckett (1993) “Vortex Methods: An Introduction and Survey of Selected Research Topics” in R. A. Nicolaides and M. D. Gunzburger (eds) *Incompressible Computational Fluid Dynamics - Trends and Advances*, pp. 335–407, Cambridge University Press [View Article](#)
- E. G. Puckett (1991) “The Random Vortex Method with Vorticity Creation: Introduction and Guide to Parameter Selection” in *Vortex Dynamics and Vortex Methods*, C. R. Anderson and C. Greengard (eds) Lectures in Applied Mathematics **Vol. 28**, pp. 567–584 American Mathematical Society [View Article](#)
- E. G. Puckett (1991) “A Numerical Study of Shock Wave Refraction at a CO₂/CH₄ Interface” in J. Glimm and A. J. Majda (Eds) *Multidimensional Hyperbolic Problems and Computations*, pp. 261–280, Springer-Verlag DOI 10.1007/978-1-4613-9121-0_21 [View Article](#)

Reviewed Conference Proceedings

- W. L. Jin, L. Chen*, and E. G. Puckett (2009) “Supply-demand diagrams and a new framework for analyzing the inhomogeneous Lighthill-Whitham-Richards model” In: Lam W., Wong S., Lo H. (Eds) *Transportation and Traffic Theory 2009: Golden Jubilee*, pp. 603–635, Springer DOI 10.1007/978-1-4419-0820-9_30 [View Article](#)
- D. B. Kothe, E. G. Puckett, and M. W. Williams* (1999) “Convergence and Accuracy of Kernel-Based Continuum Surface Tension Models”, in W. Shyy and R. Narayanan (ed) *Fluid Dynamics at Interfaces*, pp. 347-356, Cambridge Univ. Press

- J. E. Pilliod* and E. G. Puckett (1997) “An unsplit, second-order accurate Godunov method for tracking deflagrations and detonations” in A. F. P. Houwing, et al (eds) Proceedings of the 21st International Symposium on Shock Waves (**ISSW21**) pp. 1053–1058 Great Keppel Island, Queensland, Australia, July 20-25, 1997, Panther Publishers, Fyshwick, Australia [View Article](#)
- E.G. Puckett and G. H. Miller (1996) ”Numerical computation of jetting impacts” In B. Sturtevant, J. E. Shepherd, and H. G. Hornung (Eds) Proceedings of the 20th International Symposium on Shock Waves (**ISSW20**) California Institute of Technology, Pasadena, CA, July 23-28, 1995, World Scientific [View Article](#)
- J.A. Greenough, J.B. Bell, P. Colella, E.G. Puckett, and J.W. Jacobs (1996) “A Numerical Study of Shock-Acceleration of a Diffuse Helium Cylinder”, In B. Sturtevant, J. E. Shepherd, and H. G. Hornung (Eds) Proceedings of the 20th International Symposium on Shock Waves (**ISSW20**) California Institute of Technology, Pasadena, CA, July 23-28, 1995, World Scientific [View Article](#)
- J.A. Greenough, J.B. Bell, P. Colella, E.G. Puckett, and J.W. Jacobs (1996) “A Numerical Study of Shock-Acceleration of a Diffuse Helium Cylinder”, In B. Sturtevant, J. E. Shepherd, and H. G. Hornung (Eds) Proceedings of the 20th International Symposium on Shock Waves (**ISSW20**) California Institute of Technology, Pasadena, CA, July 23-28, 1995, World Scientific [View Article](#)
- J.A. Greenough, J.B. Bell, P. Colella, E.G. Puckett, and J.W. Jacobs (1996) “A Numerical Study of Shock-Acceleration of a Diffuse Helium Cylinder”, In B. Sturtevant, J. E. Shepherd, and H. G. Hornung (Eds) Proceedings of the 20th International Symposium on Shock Waves (**ISSW20**) California Institute of Technology, Pasadena, CA, July 23-28, 1995, World Scientific [View Article](#)
- J.A. Greenough, J.B. Bell, P. Colella, E.G. Puckett, and J.W. Jacobs (1996) “A Numerical Study of Shock-Acceleration of a Diffuse Helium Cylinder”, In B. Sturtevant, J. E. Shepherd, and H. G. Hornung (Eds) Proceedings of the 20th International Symposium on Shock Waves (**ISSW20**) California Institute of Technology, Pasadena, CA, July 23-28, 1995, World Scientific [View Article](#)
- E. G. Puckett, L. F. Henderson, and P. Colella (1995) “A General Theory of Anomalous Shock Refraction”, in R. Brun and L. Z. Dumitrescu (Eds) *Shock Waves @ Marseille IV*, Proceedings of the 19th International Symposium on Shock Waves (**ISSW19**) pp. 139–144, Marseille, France, July 26-30, 1993 Springer DOI 10.1007/978-3-642-79532-9_22 [View Article](#)
- L. F. Henderson, E. G. Puckett, and P. Colella (1991) “Anomalous Refraction of Shock Waves” In K. Takayama (Ed) *Shock Waves I*, Proceedings of the 18th International Symposium on Shock Waves (**ISSW18**) pp. 283–286, Sendai, Japan, July 21-26, 1989 Springer DOI 10.1007/978-3-642-77648-9 [View Article](#)
- E. G. Puckett (1988) “A Study of the Vortex Sheet Method for Solving the Prandtl Boundary Layer Equations” In Michel O. Deville (Ed) Proceedings of the Seventh GAMM Conference on Numerical Methods in Fluid Mechanics, pp. 302–309, Vieweg & Sohn, Braunschweig/Wiesbaden, West Germany

Unreviewed Conference Proceedings

- I. D. Aleinov[†], E. G. Puckett and M. M. Sussman[†] (1999) “Formation of Droplets In Microscale Jetting Devices” **FEDSM99-7106**, in *Proceedings of the 3rd ASME/JSME Joint Fluids Engineering Conference*, July 18-23, 1999, San Francisco, CA [View Article](#)
- D. B. Kothe, M. W. Williams*, K. L. Lam, D. R. Korzekwa, P. K. Tubesing, and E. G. Puckett (1999) “A Second-Order Accurate, Linearity-Preserving Volume Tracking Algorithm for Free Surface Flows on 3-D Unstructured Meshes” **FEDSM99-7109** in *Proceedings of the 3rd ASME/JSME Joint Fluids Engineering Conference*, July 18-23, 1999, San Francisco, CA [View Article](#)

- P. Colella, D. Graves, D. Modiano, E. G. Puckett, and M. M. Sussman[†] (1999) “An Embedded Boundary/Volume of Fluid Method for Free Surface Flows in Irregular Geometries” **FEDSM99-7108** in *Proceedings of the 3rd ASME/JSME Joint Fluids Engineering Conference*, July 18-23, 1999, San Francisco, CA [View Article](#)
- M. W. Williams*, D. B. Kothe, and E. G. Puckett (1999) “Approximating Interface Topologies with Applications to Interface Tracking Algorithms” **AIAA-99-1076** in *Proceedings of the 37th AIAA Aerospace Sciences Meeting*, January 11–14, 1999, Reno, NV DOI 10.2514/6.1999-1076 [View Article](#)
- M. W. Williams*, D. B. Kothe, and E. G. Puckett (1999) “Robust Finite Volume Modeling of 3-D Free Surface Flows on Unstructured Meshes” **AIAA-99-3320** in *Proceedings of the 14th AIAA Computational Fluid Dynamics Conference*, November 01–05, 1999, Norfolk, VA DOI 10.2514/6.1999-3320 [View Article](#)
- W. J. Rider, D. B. Kothe, E. G. Puckett, and I. D. Aleinov[†] (1998) “Accurate and Robust Methods for Variable Density Incompressible Flows with Discontinuities” in V. Venkatakrishnan, M. D. Salas, and S. R. Chakravarthy, (eds) *Barriers and Challenges in Computational Fluid Dynamics*, ICASE LaRC Interdisciplinary Series in Science and Engineering, **Vol. 6**, pp. 213–230, Springer DOI 10.1016/S0898-1221(98)91117-8 [View Article](#)
- J. J. Helmsen[†], E. G. Puckett, P. Colella, and M. Dorr (1996) “Two new methods for simulating photolithography development in 3D”, *Optical Microlithography IX*, Proceedings of SPIE’s 1996 International Symposium on Microlithography **2726**:253-262, DOI 10.1117/12.240959 [View Article](#)
- I. D. Aleinov[†] and E. G. Puckett (1995) “Computing surface tension with high-order kernels”, in M. Hafez and K. Oshima (Eds) *Proceedings of the Sixth International Symposium on Computational Fluid Dynamics*, pp. 13-18.
- E. G. Puckett (1991) “A Volume-of-Fluid Interface Tracking Algorithm with Applications to Computing Shock Wave Refraction” In H. Dwyer, (Ed), *Proceedings of the 4th International Symposium on Computational Fluid Dynamics*, pp. 933–938 Davis, CA
- D. L. Marcus[†], E. G. Puckett, J. B. Bell, and J. S. Saltzman (1991) “Numerical Simulation of Accelerated Interfaces” In R. Dautray, (Ed) *Proceedings of the 3rd International Workshop on the Physics of Compressible Turbulent Mixing* pp. 63–81. Royaumont, France
- L. F. Henderson, E. G. Puckett, and P. Colella (1990) On the Anomalous Refraction of Shock Waves. In *Proceedings of the Second Japan-Soviet Union Symposium on Computational Fluid Dynamics*, pages 144–153, Tsukuba, Japan.
- E. G. Puckett, L. F. Henderson, and P. Colella (1989) “Computations of the Refraction of a Plane Shock Wave at a Slow-Fast Gas Interface” In *American Institute of Physics Conference Proceedings*, **208**:946–950
- P. Colella, L. F. Henderson, and E. G. Puckett (1989) “A Numerical Study of Shock Wave Refraction at a Gas Interface” In *Proceedings of the AIAA 9th Computational Fluid Dynamics Conference*, **AIAA-89-1973** pp. 426–439, Buffalo, New York [View Article](#)
- E. G. Puckett (1988) “Numerical Estimates of the Rate of Convergence for the Vortex Sheet Method” In *Proceedings of the First National Fluid Dynamics Congress Cincinnati, Ohio* **AIAA-88-3796-CP** pp. 630–635 DOI 10.2514/6.1988-3796 [View Article](#)
- S. B. Baden and E. G. Puckett (1988) “A Fast Vortex Code for Computing 2D Flow in a Box” In *Proceedings of the First National Fluid Dynamics Congress Cincinnati, Ohio* **AIAA-88-3605-CP** pp. 185–192 [View Article](#)

DOE Laboratory Reports Not Published Elsewhere

S. A. Williams^{*}, A. S. Almgren and E. G. Puckett (2006) “On Using a Fast Multipole Method-based Poisson Solver in an Approximate Projection Method” Technical Report Number LBNL Report **59934** DOI 10.2172/898942 [View Article](#)

J. J. Helmsen[†], P. Colella, and E. G. Puckett (1997) “Non-convex profile evolution in two dimensions using volume of fluids”, Lawrence Berkeley National Laboratory Report **40693** DOI 10.2172/539515 [View Article](#)

[@]Undergraduate Student

^{*}Graduate Student

[†]Postdoctoral Scholar

Grants, Contracts, and Gifts

Grants and Contracts

- Title:** “Development and Implementation of Software Elements using State-of-the-Art Computational Methodology to Advance Modeling Heterogeneities and Mixing in Earth’s Mantle”
- Agency:** NSF Directorate for Computer & Information Science & Engineering
Office of Advanced Cyberinfrastructure’s SI² SSE Program
- Award Number:** ACI-1440811
- Award Amount:** \$502,715.00 (Includes an REU supplement of \$15,600 for PI Puckett in 2016–2017)
- Dates:** 8/1/2014 to 7/31/2018
- PI:** E. G. Puckett
- Co-PI(s):** Professor Magali Billen, Department of Earth and Planetary Sciences, U. C. Davis
- URL:** [View This Award](#)
-
- Title:** “Development of High-Order Accurate Interface Tracking Algorithms and Improved Constitutive Models for Problems in Continuum Mechanics with Applications to Jetting”
- Agency:** DOE Division of Mathematical, Information and Computing Sciences
- Award Number:** DE-FG02-03ER2557
- Amount:** \$820,501
- Dates:** 07-01-2003 to 12-14-2009
- PI:** E. G. Puckett
- Co-PI(s):** Professor G. H. Miller, Department of Chemical Engineering, U. C. Davis
-
- Title:** “An Algorithmic and Software Framework for Applied Partial Differential Equations”
- Agency:** DOE SciDAC (Scientific Discovery through Advanced Computing) Program
- Award Number:** DE-FC02-01ER25473
- Award Amount:** \$499,693
- Dates:** 08-15-2001 to 06-15-2008
- PI:** E. G. Puckett
- Co-PI(s):** None
-
- Title:** “Advanced numerical methods for modeling material interfaces with industrial applications”
- Agency:** DOE Division of Mathematical, Information and Computing Sciences
- Award Number:**
- Award Amount:** \$150,000
- Dates:** 09-01-1998 to 08-30-2001
- PI:** E. G. Puckett
- Co-PI(s):** None
-
- Title:** “ Matching funds for the NSF University-Industry Senior Research Fellowship and a Mathematical Sciences University-Industry Postdoctoral Research Fellowship”
- Agency:** Xerox Corporation
- Award Amount:** \$105,000
- Dates:** 09-15-1997 to 09-14-1998
- PI:** E. G. Puckett
- Co-PI(s):** None

Title: “Efficient, high resolution, numerical methods for free-boundary problems with surface tension”
Agency: NSF Division of Mathematical Sciences
Award Number: 9706847
Award Amount: \$67,603
Dates: 08-01-97 to 07-31-2000
PI: M. M. Sussman[†]
Co-PI(s): E. G. Puckett
URL: [View This Award](#)

Title: “Development of refined algorithms for computing hydrodynamic phenomena in a multimaterial setting”
Agency: Los Alamos National Laboratory
Award Amount: \$133,722
Dates: 07-15-96 to 07-15-99
PI: E. G. Puckett
Co-PI(s): None

Title: “Development of an Advanced Numerical Method for Modeling Thermal Ink Jet Devices”
Agency: NSF Division of Mathematical Sciences
Award Number: 9626153
Award Amount: \$151,000
Dates: 06-01-96 to 06-30-99
PI: E. G. Puckett
Co-PI(s): None
URL: [View This Award](#)

Title: “Advanced numerical methods for problems in the physical sciences”
Agency: NSF Division of Mathematical Sciences
Award Number: 9404410
Award Amount: \$106,190
Dates: 06-15-95 to 05-31-98
PI: E. G. Puckett
Co-PI(s): None
URL: [View This Award](#)

Title: “Advanced numerical methods for modeling material interfaces in industrial problems”
Agency: DOE Division of Mathematical, Information, and Computing Sciences
Award Number:
Award Amount: \$150,000
Dates: 08-01-95 to 01-30-98
PI: E. G. Puckett
Co-PI(s): None

Title: “Development and Application of Advanced Numerical Methods to Outstanding Problems in Experimental Shock Wave Geophysics”
Agency: NSF Division of Mathematical Sciences
Award Number: 9316529
Award Amount: \$66,119
Dates: 07-15-94 to 06-30-96
PI: E. G. Puckett
Co-PI(s): None
URL: [View This Award](#)

Title: “Advanced numerical methods for for Modeling Fluid Interfaces”
Agency: NSF Division of Mathematical Sciences
Award Number: 9104472
Award Amount: \$66,119
Dates: 08-01-91 to 07-31-95
PI: E. G. Puckett
Co-PI(s): None
URL: [View This Award](#)

NSF Grants to Fund the Purchase of Computing Equipment

Title: “Scientific Computing Research Environments for the Mathematical Sciences”
Agency: NSF, Division of Mathematical Sciences
Award Number: 0532308
Award Amount: \$112,510
Dates: 9/15/2005 to 10/1/2007
PI: E. G. Puckett
Co-PI(s): A. Y. Cheer, E. Rains, N. Saito, and J. A. De Loera
URL: [View This Award](#)

Title: “Scientific Computing Research Environments for the Mathematical Sciences”
Agency: NSF, Division of Mathematical Sciences
Award Number: 0079760
Award Amount: \$199,993
Dates: 9/01/2000 to 08/31/2003
PI: A. Y. Cheer,
Co-PI(s): E. G. Puckett, N. Saito, Z. Bai and S. Shkoller
URL: [View This Award](#)

Title: “Scientific Computing Research Environments for the Mathematical Sciences”
Agency: NSF Division of Mathematical Sciences
Award Number: 9707756
Award Amount: \$74,563
Dates: 08-01-1997 to 07-31-1999
PI: E. G. Puckett
Co-PI(s): A. Edelson, A. Fannjiang, J. Gravner, D. Stuart
URL: [View This Award](#)

Title: “Mathematical Sciences Computing Research Environments”
Agency: NSF Division of Mathematical Sciences
Award Number: 9508411
Award Amount: \$80,000
Dates: 07-15-1995 to 06-30-1997
PI: E. G. Puckett
Co-PI(s): J. Hass, J. K. Hunter, and C. Tracy
URL: [View This Award](#)

Gifts (No Overhead and No End Date)

Title: “Development of high-order accurate numerical methods for modeling Piezo-electrically driven jetting on a microscale”
Agency: Okidata USA, Mount Laurel, New Jersey
Award Amount: \$10,000 (Note: Gift)
Dates: 02-28-1999 (No End Date)
PI: E. G. Puckett
Co-PI(s): None

Title: “A numerical method for modeling Piezo-electric jetting devices”
Agency: MicroFab Technologies, Inc., Plano, Texas
Award Amount: \$13,000 (Note: Gift)
Dates: 10-01-1996 (No End Date)
PI: E. G. Puckett
Co-PI(s): None

Title: “Development of a modern, high-resolution numerical method for modeling thermal ink jet devices”
Agency: Xerox Foundation
Award Amount: \$45,000 (Note: Gift)
Dates: 02-28-1995 (No End Date)
PI: E. G. Puckett
Co-PI(s): None