Curriculum Vitae

Bruce M. Boghosian
Professor and Chair of Mathematics
Tufts University

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Employment History

- **Tufts University**, Medford, MA: Professor and Chair, Department of Mathematics (2000 – present, promoted to rank of Professor in 2003, promoted to Chair in 2006); Adjunct Professor, Department of Computer Science (2003 – present).

- **Boston University**, Boston, MA: Research Associate Professor, Center for Computational Science and Department of Physics (1994 – 2003).

- **Thinking Machines Corporation**, Cambridge, MA: Senior Scientist, Mathematical Sciences Research Group (1986 – 1994).

- **Lawrence Livermore National Laboratory**, Livermore, CA: Physicist, Plasma Theory Group (1978 – 1986).

Visiting Positions

- **École Normale Supérieure**, Paris, France: Visiting Researcher (7 April – 7 May 2008).

- **Peking University**, Beijing, China: Visiting Professor, School of Engineering, gave half-semester course entitled "Topological Fluid Dynamics" (5 November – 12 December 2007).

- **University College London**: EPSRC Visiting Fellow, Centre for Computational Science, Department of Chemistry (2002-present).

- **University of California, Berkeley**: Visiting Professor, Department of Physics (1996 – 1997).

- **International Centre for Theoretical Physics**, Trieste, Italy: Visiting Scientist, Condensed Matter Division (Summer, 1996).

- **Schlumberger Cambridge Research Centre**, Cambridge, UK: Consultant (1994 – 1998).

- **University of California, Davis**: Research Scientist, Department of Applied Science (1995).

- **Massachusetts Institute of Technology, Plasma Fusion Center**: Visiting Scientist (1994 – 1995).

- **Massachusetts Institute of Technology, Laboratory for Computer Science**: Visiting Scientist, Information Mechanics Group (1993 - 1994).

Education

- **University of California, Davis**: Doctor of Philosophy degree, Department of Applied Science and Engineering (1980 – 1986, degree conferred in March, 1987). Thesis research was conducted primarily at the University of California at Berkeley and Lawrence Berkeley Laboratory.

- **Massachusetts Institute of Technology**: Bachelor of Science degree, Physics; Master of Science degree, Nuclear Engineering (1973 - 1978, both degrees conferred in 1978). Thesis research was carried out at the M.I.T. Plasma Fusion Center. Graduate traineeship from U.S. Department of Energy (1977-1978).

Awards and Honors

- Co-recipient of Department of Energy Innovative and Novel Computational Impact on Theory and Experiment (INCITE) award (2008).

- Elected as a Foreign Member of the National Academy of Sciences of the Republic of Armenia (2008).

- Work on Grid Computing featured on web site of British Embassy to the U.S. See:
  `http://www.britainusa.com/science/articles_show_2.asp?a=7648`

- Co-recipient of HPC Challenge award for Most Innovative Data-Intensive Computation, Supercomputing 2003, sponsored by the Association for Computing Machinery (2003)

- Recipient of Undergraduate Initiative in Teaching (UNITE) award, College of Arts, Sciences and Engineering, Tufts University (2002)

- Elected to Fellowship of the American Physical Society (2000)

- Elected secretary-treasurer of the American Physical Society Division of Computational Physics (1995–1997); reelected (1998–2000)

Patents

- Patent number 7,343,555, "System and Method for Delivery of Documents over a Computer Network," with J. Ko and C. Traynor, 11 March 2008.

Editorial Work

- Member of editorial board of *Journal of Computational Science* (Elsevier, 2009 – present).

- Guest Editor of two special issues on Scientific Applications of Grid Computing, *Computing in Science and Engineering*, (September/October and November/December 2005).

- Member of editorial board of *Physica A* (2001 – present)

- Member of editorial board of *Computing in Science and Engineering* (2001 – present)

- Book Review Editor, *Computing in Science and Engineering* (2003 – 2005)

- Member of editorial board of the *International Journal of Modern Physics C – Physics and Computers* (1997 – present)

Selected Funded Grants

- NSF Major Research Instrumentation program, "Acquisition of a Scientific Visualization Facility" (2006-2009).

- NSF, Computing Division (2005–2006), "Cross-Site Runs and Computational Steering," subcontracted to Argonne National Laboratory.

- ARO, Physics Division, Quantum Information Science, basic research grant (2004-2007).

- AFOSR, Directorate of Mathematics and Space Sciences, Division of Computational Mathematics, basic research grant (1995–1996); renewed (1997–1998); renewed (1999–2000); renewed (2001-2003); renewed (2004-2007).

- DARPA QuIST grant subcontract providing postdoctoral position (2002-2006), subcontracted to Texas A&M University.

- NSF PACI/NRAC grant of supercomputer time from Pittsburgh Supercomputer Center (2003-2005).

- NATO travel grant (1995–1996); renewed (1997–1998).

Selected Professional Service

- Member Program Committee, "Challenges of Large Applications in Distributed Environments (CLADE)," to be held in conjunction with the 18th International Symposium on High Performance Distributed Computing (HPDC-18), Munich, Germany (9-10 June 2009).

- Member Program Committee for the International Workshop on the Simulation of Multiphysics Multiscale Systems (2005 – present).

- Member Organizing Committee, "Plasma Theory, Wave Kinetics, and Nonlinear Dynamics," University of California Berkeley, Berkeley, California (5-7 October 2007)

- Participant, National Science Foundation Visualization Workshop, Arlington, Virginia (27-28 September 2007)

- Participant, National Science Foundation Cyber-Fluids Workshop, Arlington, Virginia (19-20 July 2007)

- Chair of Visiting Assessment Committee, Center for Computational Science, Boston University (September, 2005)

- Program Review panel member, U.S. Department of Energy, Albuquerque, New Mexico (May, 2005)

- Organizing committee, International Conference on the Discrete Simulation of Fluids: member (1996–1997); chair (1997–1998); member (1998–1999); member (2002-present); chair of local organizing committee (2004)

- Member of Nicholas Metropolis Award Committee, Division of Computational Physics, American Physical Society (2002-2005), chair (2003-2004)

- Member of Fellowship Committee, Division of Computational Physics, American Physical Society (2002)

- Member of Program Committee of the Genetic and Evolutionary Computation Conference (GECCO-99)

- Member of APS organizing committee for Conference on Computational Physics (CCP99), March, 1999, Atlanta, Georgia

- Member of APS organizing committee for Physics Computing '97, August 25–28, 1997, Santa Cruz, California

- Member of American Mathematical Society, American Physical Society, Mathematical Association of America, and Sigma Xi

Selected Service within University

- Faculty representative to Information Technology Advisory Council (2008–present).

- Principal Investigator, Center for Scientific Visualization, Tufts University (inaugurated on 8 February 2008).

- Member, Faculty Subcommittee for Visiting Lecturer Selection, Tufts Experimental College (April 2007)

- Member of advisory committee to the Dean of the Graduate School of Arts and Sciences (2007).

- Chair of the Department of Mathematics (2006–present)

- Faculty representative to Tufts University Information Technology Council (2005–2006).

- Member of Tufts University Faculty Research and Award Committee (2001–2006).

- Member of Tufts University Scholarship Committee (2003–present).

- Member of Curriculum or Graduate Committee, Department of Mathematics (continuous basis).

- Chair of Hiring Committees, Tufts University Department of Mathematics (2003-2004 and 2005-2006).

- Speaker at events for prospective students held by Office of Undergraduate Admissions, Tufts University (2004 and 2005).

Refereed Articles in Journals and Proceedings

1. M. Mendoza, B.M. Boghosian, H.J. Herrmann, S. Succi, "Lattice Boltzmann scheme for relativistic fluids," accepted for publication in *Physical Review Letters* (2010).

2. L. Fazendeiro, B.M. Boghosian, P.V. Coveney, J. Lätt, "Unstable Periodic Orbits in Turbulent Hydrodynamics," *Journal of Computational Science* **1** (2010) 13-23.

3. G. Caterina, B.M. Boghosian, "An order-preserving property of additive invariants for Takesue-type reversible cellular automata," submitted to *Theoretical Computer Science* (2009).

4. B.M. Boghosian, "Exact Hydrodynamics of the Lattice BGK Equation," submitted to *Physica A* (2008).

5. G. Caterina, B.M. Boghosian, "A 'No-Go' Theorem for the Existence of an Action Principle for Discrete Invertible Dynamical Systems," *Physica A* **387** (2008) 6734-6744.

6. A. Xu, S. Succi, B.M. Boghosian, "Lattice BBGKY Scheme for Two-Phase Flows: One-Dimensional Case," in *Proceedings of 14th International Conference on the Discrete Simulation of Fluid Dynamics (DSFD 2005)*, published in *Mathematics and Computers in Simulation* **72** (2006) 249-252.

7. B. Boghosian, P. Coveney, S. Dong, L. Finn, S. Jha, G. Karniadakis, N. Karonis, "Nektar, SPICE, and Vortonics: Using Federated Grids for Large-Scale Scientific Applications," in *Proceedings of Challenges of Large Applications in Distributed Environments (CLADE)*, published by the IEEE Computing Society (19 June 2006) 34-42. ISBN 1-4244-0420-7. INSPEC Accession Number 9018016.

8. Bruce M. Boghosian, Jean Pierre Boon, "Lattice Boltzmann and Nonextensive Diffusion," *Europhysics News* **36** (6) (November/December 2005) 192-194. http://www.europhysicsnews.com/

9. Lucas I. Finn, Bruce M. Boghosian, Christopher N. Kottke, "Vortex Core Identification in Viscous Hydrodynamics," *Phil. Trans. Royal Soc. A* **363** (2005) 1937-1948.

10. Lucas I. Finn, Bruce M. Boghosian, "A Variational Approach to Vortex Core Identification," *Physica A* **362** (2006) 11-16. doi:10.1016/j.physa.2005.09.013

11. Peter J. Love, Bruce M. Boghosian, "From Dirac to Diffusion: Decoherence in Quantum Lattice Gases," *J. Quantum Information Processing* **4** (2005) 335-354.

12. Peter J. Love, Bruce M. Boghosian, "Type II Quantum Algorithms," *Physica A* **362** (2006) 210-214. doi:10.1016/j.physa.2005.09.017

13. David J. Fair, Rakesh Venkatesh, Bruce Boghosian, and Douglas M. Matson, "Role of Sample Size in Nucleation Kinetics of Phase Transformations in Steel Alloys," *Microgravity Science and Technology Journal* **XVI**-1 (2005) 55-58.

14. S. M. Pickles, R. J. Blake, B. M. Boghosian, J. M. Brooke, J. Chin, P. E. L. Clarke, P. V. Coveney, N. Gonzlez-Segredo, R. Haines, J. Harting, M. Harvey, M. A. S. Jones, M. Mc Keown, R. L. Pinning, A. R. Porter, K. Roy, M. Riding, "The TeraGyroid Experiment," in *Proceedings of the Workshop on Case Studies on Grid Applications at GGF 10* (2004). http://www.zib.de/ggf/apps/meetings/ggf10/TeraGyroid-Case-Study-GGF10-final.pdf

15. Peter J. Love, Bruce M. Boghosian, "Quaternionic Madelung Transformation and Nonabelian Fluid Dyanamics," *Physica A* **332** (2004) 47-59.

16. Bruce M. Boghosian, Peter J. Love, Jeffrey Yepez, "Entropic Lattice Boltzmann Model for Burgers' Equation," *Phil. Trans. Roy. Soc. A* **362** (2004) 1691-1702.

17. Peter J. Love, Bruce M. Boghosian, David A. Meyer, "Lattice-Gas Simulations of Dynamical Geometry in One Dimension," *Phil. Trans. Roy. Soc. A* **362** (2004) 1667-1676.

18. Bruce M. Boghosian, Peter J. Love, Jeffrey Yepez, "Galilean-Invariant Multi-speed Entropic Lattice Boltzmann Models," *Physica D* **193** (2003) 169-181.

19. Peter J. Love, Bruce M. Boghosian, "On the Dependence of the Navier Stokes Equations on the Distribution of Molecular Velocities," *Physica D* **193** (2003) 182-194.

20. Bruce M. Boghosian, Peter J. Love, Peter Coveney, Sauro Succi, Ilya Karlin, Jeffrey Yepez, "Galilean-Invariant Lattice Boltzmann Models with H-Theorem," *Phys. Rev. E Rapid Communications* **68** (2): Art. No. 025103 Part 2 (2003).

21. Bruce M. Boghosian, Peter J. Love, David A. Meyer, "Toward the Simplest Hydrodynamic Lattice-Gas Model," *Philosopical Transactions of Proc. Roy. Soc. Lon.* **360** (2002) 333-344.

22. Jeffrey Yepez, Bruce M. Boghosian, "An Efficient and Accurate Quantum Lattice-Gas Model for the Many-Body Schrodinger Wave Equation," *Comp. Phys. Comm.* **146** (2002) 280-294.

23. Francis J. Alexander, Bruce M. Boghosian, Richard C. Brower, S. Roy Kimura, "Fourier Acceleration of Langevin Molecular Dynamics," *Phys. Rev. E* **64** (2001) 066704. `cond-mat/0001418`

24. B.M. Boghosian, J. Yepez, P.V. Coveney, A.J. Wagner, "Entropic Lattice Boltzmann Methods," *Proc. Roy. Soc. Lon. A* **457** (2001) 717-766. `cond-mat/0005260`

25. M. Nekovee, P.V. Coveney, H. Chen, B.M. Boghosian, "A Lattice-Boltzmann Model for Interacting Amphiphilic Fluids," *Phys. Rev. E* **62** (2000) 8282-8294. `cond-mat/0006319`

26. B.M. Boghosian, C. Chow, T. Hwa, "Hydrodynamics of the Kuramoto-Sivashinsky Equation in Two Dimensions," *Phys. Rev. Lett.* **83** (1999) 5262-5265. `cond-mat/9911069`

27. B.M. Boghosian, P.V. Coveney, "A Particulate Basis for an Immiscible Lattice-Gas Model," *Comp. Phys. Comm.* **129** (2000) 46-55. `cond-mat/9911340`

28. H. Chen, B.M. Boghosian, P.V. Coveney, M. Nekovee, "A Lattice Boltzmann Model of Ternary Amphiphilic Fluids," *Proc. Roy. Soc. London A* **456** (2000) 2043-2057. `cond-mat/9910369`

29. B.M. Boghosian, P.V. Coveney, P.J. Love, "A Three-Dimensional Lattice-Gas Model for Amphiphilic Fluid Dynamics," *Proc. Roy. Soc. Lon. A* **456** (2000) 1431-1454. `cond-mat/9907298`

30. B.M. Boghosian, "A Generalization of Metropolis and Heat-Bath Sampling for Monte Carlo Simulations," *Phys. Rev.* E **60** (1999) 1189-1194. `cond-mat/9906317`

31. B.M. Boghosian, "Navier-Stokes Equations for Generalized Thermostatistics," *Braz. J. Phys.* **29** (1999) 91-107. `cond-mat/9812154`

32. B.M. Boghosian and P.V. Coveney, "Inverse Chapman-Enskog Derivation of the Thermohydrodynamic Lattice-BGK Model," *Int. J. Mod. Phys.* C **9** (1998) 1231-1246. `comp-gas/9810001`

33. P.V. Coveney, J.-B. Maillet, J.L. Wilson, P.W. Fowler, O. Al-Mushadani and B.M. Boghosian, "Lattice Gas Simulations of Ternary Amphiphilic Fluid Flow in Porous Media," *Int. J. Mod. Phys.* C **9** (1998) 1479-1490. `comp-gas/9810002`

34. F.W.J. Weig, P.V. Coveney and B.M. Boghosian, "Lattice-Gas Simulations of Minority-Phase Domain Growth in Binary Immiscible and Ternary Amphiphilic Fluid," *Phys. Rev.* E **56** (1997) 6877-6888. `cond-mat/9705248`

35. A.N. Emerton, P.V. Coveney and B.M. Boghosian, "Applications of a Lattice-Gas Automaton Model for Amphiphilic Systems," *Physica* A **239** (1997) 373-381.

36. A.N. Emerton, F.J.W. Weig, P.V. Coveney and B.M. Boghosian, "The Shear-Induced Isotropic-to-Lamellar Transition in a Lattice-Gas Model of Ternary Amphiphilic Fluids," *J. Phys.: Cond. Mat.* **9** (1997) 8893-8905. `cond-mat/9709181`

37. B.M. Boghosian and W. Taylor, "Quantum Lattice-Gas Models for the Many-Body Schrodinger Equation," Proceedings of the Sixth International Conference on Discrete Fluid Mechanics, *Int. J. Mod. Phys.* C **8** (1997) 705-716. `quant-ph/9701016`

38. B.M. Boghosian and W. Taylor, "Simulating Quantum Mechanics on a Quantum Computer," *Physica* D **120** (1998) 30-42. `quant-ph/9701019`

39. F.W. Starr, S.T. Harrington, B.M. Boghosian and H.E. Stanley, "Interface Roughening in a Hydrodynamic Lattice-Gas Model with Surfactant," *Phys. Rev. Lett.* **77** (1996) 3363-3366. `cond-mat/9606188`

40. B.M. Boghosian and W. Taylor, "A Quantum Lattice-Gas Model for the Many-Particle Schrödinger Equation in d Dimensions," *Phys. Rev.* E **8** (1997) 705-716. `quant-ph/9604035`

41. A.N. Emerton, P.V. Coveney and B.M. Boghosian, "Lattice-Gas Simulations of Domain Growth, Saturation, and Self-Assembly in Immiscible Fluids and Microemulsions," *Phys. Rev.* E, **55** (1997) 708-720. `comp-gas/9603002`

42. P.V. Coveney, A.N. Emerton and B.M. Boghosian, "Simulation of Self-Reproducing Micelles Using a Lattice-Gas Automaton," *J. Amer. Chem. Soc.* **118** (1996) 10719-10724. `cond-mat/9709183`

43. B.M. Boghosian, J. Yepez, F.J. Alexander and N.H. Margolus, "Integer Lattice Gases," *Phys. Rev.* E **55** (1997) 4137-4147. `comp-gas/9602001`

44. B.M. Boghosian, P.V. Coveney and A.N. Emerton, "A Lattice-Gas Model of Microemulsions," *Proc. Roy. Soc.* A **452** (1996) 1221-1250. `comp-gas/9507001`

45. B.M. Boghosian, "Thermodynamic Description of Two-Dimensional Euler Turbulence Using Tsallis Statistics," *Phys. Rev.* E **53** (1996) 4754-4763. `chao-dyn/9505012`

46. B.M. Boghosian and W. Taylor, "Renormalized Equilibria of a Schlögl Model Lattice Gas," *J. Stat. Phys.* **81** (1995) 295-317. `comp-gas/9501002`

47. C. Adler, B.M. Boghosian, E. Flekkøy, N.H. Margolus and D.H. Rothman, "Simulating Three-Dimensional Hydrodynamics on a Cellular Automata Machine," *J. Stat. Phys.* **81** (1995) 105-128. `chao-dyn/9508001`

48. B.M. Boghosian and W. Taylor, "Correlations and Renormalization in Lattice Gases," *Phys. Rev.* E **52** (1995) 510-554. `comp-gas/9403003`

49. B.M. Boghosian and W. Taylor, "Renormalization of Lattice Gas Transport Coefficients," in Pattern Formation and Lattice Gas Automata, A. Lawniczak, R. Kapral, eds., *Fields Institute Communications* **6** (1996) 13-27. `comp-gas/9411001`

50. T. Germann, D.R. Herschbach and B.M. Boghosian, "Dimensional Perturbation Theory on the Connection Machine," *Computers in Physics* **8** (1994) 712-721. `chem-ph/9411003`

51. W.D. Hillis and B.M. Boghosian, "Parallel Scientific Computation," *Science* **261** (1993) 856-863.

52. J.B. Anderson, C.A. Traynor and B.M. Boghosian, "An Exact Quantum Monte Carlo Calculation of the Helium-Helium Intermolecular Potential," *J. Chem. Phys.* **99** (1993) 345-351.

53. J.B. Anderson, C.A. Traynor and B.M. Boghosian, "Quantum Chemistry by Random Walk: Exact Treatment of Many-Electron Systems," *J. Chem. Phys.* **95** (1991) 7418-7425.

54. C.A. Traynor, J.B. Anderson and B.M. Boghosian, "A Quantum Monte Carlo Calculation of the Ground-State Energy of the Hydrogen Molecule," *J. Chem. Phys.* **94** (1991) 3657-3664.

55. P. Tamayo, J.P. Mesirov and B.M. Boghosian, "Parallel Approaches to Short-Range Molecular dynamics Simulations," in *Proceedings of Supercomputing '91*, IEEE (1991) 462.

56. C.D. Levermore and B.M. Boghosian, "Deterministic Cellular Automata with Diffusive Behavior," in Cellular Automata and Modeling of Complex Physical Systems, P. Manneville, N. Boccara, G.Y. Vichniac, R. Bidaux, eds., *Springer Proceedings in Physics*, Springer-Verlag **46** (1989) 118-129.

57. B.M. Boghosian and C.D. Levermore, "A Deterministic Cellular Automaton with Diffusive Behavior," in *Proceedings of the Workshop on Discrete Kinetic Theory, Lattice Gas Dynamics, and Foundations of Hydrodynamics*, R. Monaco, ed., World Scientific (1989) 44-61.

58. B.M. Boghosian, W. Taylor and D.H. Rothman, "A Cellular Automata Simulation of Two-Phase Flow on the CM-2 Connection Machine Computer," in *Proceedings of Supercomputing '88*, IEEE (1988) 34-44.

59. B.M. Boghosian and C.D. Levermore, "A Cellular Automaton for Burgers' Equation," *Complex Systems* **1** (1987) 17-30.

60. W.M. Nevins, B.M. Boghosian, R.H. Cohen, W.F. Cummins, P.F. Dubois, A. Friedman, L.L. Lodestro, Y. Matsuda, L.D. Pearlstein, G.D. Porter, M.E. Rensink, T.D. Rognlien, G.R. Smith, J.J. Stewart and M.W. Phillips, "A Tandem Mirror Modeling Code," in *Proceedings of the Eleventh International Conference on Plasma Physics and Controlled Nuclear Fusion Research* (1986).

61. A.N. Kaufman and B.M. Boghosian, "A Lie-Transform Derivation of the Gyrokinetic Hamiltonian System," in *Contemporary Mathematics*, Amer. Math. Soc. **28** (1984) 169-176.

62. G.A. Carlson, W.L. Barr, B.M. Boghosian, R.S. Devoto, J.N. Doggett, G.W. Hamilton, B.M. Johnston, J.D. Lee, B.G. Logan, R.W. Moir, W.S. Neef, Jr. and R.B. Campbell, "Designs of Tandem Mirror Fusion Reactors" in *Fusion Reactor Design and Technology* **1**, IAEA-TC-392/26 (1983).

63. G.A. Carlson, W.L. Barr, B.M. Boghosian, R.H. Bulmer, R.B. Campbell, R.S. Devoto, G.W. Hamilton, B.M. Johnston, W.N. Kumai, B.G. Logan, in *Proceedings of the Fifth In the Fifth American Nuclear Society Topical Meeting on the Technology of Fusion Energy* (1983).

64. G.A. Carlson, B. Arfin, W.L. Barr, B.M. Boghosian, J.L. Erickson, J.H. Fink, G.W. Hamilton, B.G. Logan, J.O. Myall, W.S. Neef, Jr., G.A. Emmert, J. Kesner, G.L. Kulcinski, D.C. Larbalestier, E.M. Larsen, W. Maurer, C.W. Maynard, J.F. Santarius, J.E. Scharer, I.N. Sviatoslavski, D.K. Sze, W.F. Vogelsang and P. Wilkes, "Tandem Mirror Reactor with Thermal Barriers," *Nuclear Engineering and Design* **63** (1981) 233-250.

65. B.M. Boghosian, "Plasma Performance Study for the Tandem Mirror Reactor" in *Proceedings of the Fourth ANS Topical Meeting on the Technology of Controlled Nucelar Fusion* (1980).

66. B.G. Logan, B. Arfin, W.L. Barr, B.M. Boghosian, G.A. Carlson, T.C. Chu, J.L. Erickson, J.H. Fink, T.K. Fowler, G.W. Hamilton, T. Kaiser, R.W. Moir, J.O. Myall, W.S. Neef, Jr., R.W. Conn, G.A. Emmert, F. Kantrowitz, J. Kesner, L.L. Lao, J. Santarius and K.S. Shaing, "Tandem Mirror Reactors with Thermal Barriers" in *Proceedings of the Eigth International Conference on Plasma Physics and Controlled Nuclear Fusion Research* (1980).

Invited Articles

67. L. Fazendeiro, B. M. Boghosian, P. V. Coveney, J. Latt and H. Tang, "Search for Unstable periodic orbits in the Navier-Stokes equations," *Proceedings of the TeraGrid08 conference*, Las Vegas (June 9-13, 2008). `http://archive.teragrid.org/events/teragrid08/Papers/papers.html`

68. Bruce M. Boghosian and Peter V. Coveney, "Guest Editors' Introduction: Scientific Applications of Grid Computing, Part II," *Computing in Science and Engineering* **7** (6) (November/December 2005) 10-11.

69. Bruce M. Boghosian and Peter V. Coveney, "Guest Editors' Introduction: Scientific Applications of Grid Computing," *Computing in Science and Engineering* **7** (5) (September/October 2005) 10-13.

70. Bruce M. Boghosian, "Discrete Simulation of Fluid Dynamics," *Physica A* **362** (2006) xi-xiv. `doi:10.1016/j.physa.2005.09.003`

71. Bruce M. Boghosian, "A Crash Course in Computing: A Review of Andrew Adamatzkys Book Collision-Based Computing, " *Computers in Science and Engineering* (Jan/Feb 2005) 17-20.

72. Bruce M. Boghosian, Nicolas G. Hadjiconstantinou, "Mesoscale Models of Fluid Dynamics," in *Handbook of Materials Modeling, Volume I: Methods and Models*, S. Yip (ed.) Springer (2005) ISBN-10 1-4020-3287-0 (HB), ISBN-10 1-4020-3286-2 (e-book), ISBN-13 978-1-4020-3287-5 (HB), ISBN-13 978-1-4020-3286-8 (e-book).

73. B.M. Boghosian, P.V. Coveney, P. Love, J.-B. Maillet, "Mesoscale Modeling of Amphiphilic Fluid Dynamics," *Molecular Simulation* **26** (2000) 85-100.

74. J.M. Yeomans and B.M. Boghosian, "Report on the Seventh International Conference on the Discrete Simulation of Fluids," *Computers in Physics* **12** (Nov/Dec, 1998).

75. B.M. Boghosian, "Very Large-Scale Simulation of Physical Systems," *Encyclopedia of Applied Physics* **23** (1998) 151-198.

76. B.M. Boghosian, F.J. Alexander and P.V. Coveney, "Discrete Models of Complex Fluid Dynamics," Proceedings of the Sixth International Conference on Discrete Fluid Mechanics, *Int. J. Mod. Phys.* C **8** (1997) 637-640.

77. B.M. Boghosian, "Lattice Gas Hydrodynamics," *Nucl. Phys.* B (Proc. Suppl.) **30** (1993) 204-210.

78. B.M. Boghosian, "Lattice Gases Illustrate the Power of Cellular Automata in Physics," *Computers in Physics* **5** (1991) 585-590.

79. B.M. Boghosian, "Computational Physics on the Connection Machine," *Computers in Physics* **4** (1990) 14-33.

80. B.M. Boghosian, "A Survey of Techniques for Simulating Partial Differential Equations with Lattice Gases," in *1989 Lectures in Complex Systems*, E. Jen, ed. (1989).

81. B.M. Boghosian, "The Chapman-Enskog Method for Lattice Gases," in *1989 Lectures in Complex Systems*, E. Jen, ed. (1989).

82. B.M. Boghosian, "Data-Parallel Computation on the CM-2 Connection Machine, I. Architecture and Primitives," in *1989 Lectures in Complex Systems*, E. Jen, ed. (1989).

83. B.M. Boghosian, "Data-Parallel Computation on the CM-2 Connection Machine, II. Basic Linear Algebra Algorithms," in *1989 Lectures in Complex Systems*, E. Jen, ed. (1989).

84. B.M. Boghosian, "Data-Parallel Computation on the CM-2 Connection Machine, III. Monte Carlo Simulations on the Connection Machine," in *1989 Lectures in Complex Systems*, E. Jen, ed. (1989).

Thesis

85. B.M. Boghosian, "Covariant Lagrangian Methods of Relativistic Plasma Theory," PhD thesis, University of California, Davis (1987), published by U.M.I. Dissertation Services, order number 9422767.

Invited Talks and Presentations

1. Invited speaker, 16th International Conference on the Discrete Simulation of Fluid Dynamics (DSFD 2007), University of Rome, "Tor Vergata," Rome, Italy (5-9 July 2010).

2. Invited participant, National Science Foundation Computational Fluid Dynamics Workshop, University of Texas, Austin, Texas (22-23 March 2010).

3. Colloquium speaker, Initiative in Innovative Computing, Harvard University (24 February 2010).

4. Invited participant, Workshop on Mathematics of Interacting Climate Processes, National Center for Atmospheric Research, Boulder, Colorado (11-13 February 2010).

5. Colloquium speaker, Center for Theoretical and Mathematical Sciences, Duke University, Durham, North Carolina (1 December 2009).

6. Invited speaker, NSF-NAIS Workshop, the University of Edinburgh, Edinburgh, Scotland (20 October 2009).

7. Colloquium series as Scholar in Residence, American University of Armenia, Yerevan, Armenia (16, 21, 27, 30 July 2009).

8. Colloquium Speaker, Center for Computational Science, Boston University, Boston, Massachusetts (8 May 2009).

9. Speaker, American Physical Society March Meeting, Pittsburgh, Pennsylvania (16 March 2009).

10. Speaker, Computational Science and Engineering 2009 meeting of the Society for Industrial and Applied Mathematics, Miami, Florida (6 March 2009).

11. Speaker, Numerical Algorithms and High-Performance Computing Roadmap Meeting, The Royal Society, London, United Kingdom (26-27 January 2009).

12. Colloquium Speaker, Department of Physics, Wesleyan University, Middletown, Connecticut (13 November 2008).

13. Speaker, UK e-Science All-Hands Meeting, Edinburgh, Scotland, United Kingdom (8-11 September 2008).

14. Speaker, Gordon Conference on Physics Research and Education, Bryant University, Smithfield, Rhode Island (8-13 June 2008).

15. Colloquium Speaker, Shanghai Institute of Applied Mathematics and Mechanics, Shanghai University, Shanghai, China (6 December 2007).

16. Speaker, 16th International Conference on the Discrete Simulation of Fluid Dynamics (DSFD 2007), Banff, Alberta, Canada (23-27 July 2007).

17. Colloquium Speaker, Manchester Centre for Interdisciplinary Computational and Dynamical Analysis (CICADA), University of Manchester, Manchester, United Kingdom (27 June 2007).

18. Speaker, "Computational Science 2007: Interdisciplinary Challenges and Perspectives, from the Grid to e-Science," Royal Society of London (25-26 June 2007).

19. Speaker, "Quantum Algorithms for Classical Physics Problems and Differential Equations," workshop held at Los Alamos National Laboratory, Los Alamos, New Mexico (24-27 May 2007).

20. Poster, "Dynamics Days," Boston, Massachusetts (3-6 January 2007).

21. Speaker, "Expanding Horizons: The Scientific Legacy of Brosl Hasslacher," Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos, New Mexico (3-4 November 2006).

22. Speaker, Dynamics Seminar, Brown University (17 April 2006).

23. Speaker, Center for Computational Science, Boston University (7 April 2006).

24. Speaker, SIAM Conference on Parallel Computing, San Francisco, California (to be held, 22-24 February 2006).

25. Speaker, Department of Applied Mathematics Colloquium, Brown University (29 November 2005).

26. Speaker at booths for TeraGrid, Pittsburgh Supercomputing Center, Argonne National Laboratory, and UK eScience Programme at Supercomputing 2005, Seattle, Washington (12-17 November 2005).

27. Speaker, 14th International Conference on the Discrete Simulation of Fluid Dynamics (DSFD 2005), Kyoto, Japan (22-26 August 2005).

28. Speaker, Third MIT Conference on Fluid Dynamics, Massachusetts Institute of Technology, Cambridge, Massachusetts (16-17 June 2005).

29. Speaker, Conference on Vortex Rings, International Centre for Theoretical Physics, Trieste, Italy (7-10 June 2005).

30. Speaker, 93rd Statistical Mechanics Conference, Rutgers University, New Brunswick, New Jersey (15-17 May 2005).

31. Speaker, Physics Department Colloquium, Clark University, Worcester, Massachusetts (3 March 2005).

32. Speaker, Workshop on Quantum Computing for Physical Modeling, Martha's Vineyard, Massachusetts (12-15 September 2004).

33. Speaker and Member of Organizing Committee, 13th International Conference on the Discrete Simulation of Fluid Dynamics (DSFD 2004), Cambridge, Massachusetts, USA (16-20 August 2004).

34. Speaker, International Conference on Computational and Experimental Engineering and Sciences (ICES 2004), Madeira, Portugal (26-29 July 2004).

35. Speaker, 31st Workshop of the International School of Solid State Physics, "Complexity, Metastability and Nonextensivity," Ettore Majorana Foundation and Centre for Scientific Culture, Erice, Sicily (20-26 July 2004).

36. Speaker, RealityGrid Annual Conference, Royal Society of London (15-16 June 2004).

37. Speaker, SC Global, Supercomputing 2003 (20 November 2003). Winner of HPC Challenge Award for Most Innovative Data-Intensive Application.

38. Speaker, RealityGrid Annual Conference, Royal Society of London (17-18 June 2003).

39. Speaker, AFOSR Grantees Meeting, University of Florida, Graduate Engineering Research Center (29-30 May 2003).

40. Speaker, Quantum Information Processing (QIP) Colloquium, Massachusetts Institute of Technology (10 March 2003).

41. Speaker, Workshop on Anomalous Distributions, Nonlinear Dynamics, and Nonextensivity, Center for Nonlinear Studies, Los Alamos National Laboratory, Santa Fe, New Mexico (7 November 2002).

42. Speaker, Greater Boston Statistical Physics Workshop, Brandeis University, Waltham, Massachusetts (19 October 2002).

43. Session Chair, New England Complex Systems Institute, Annual Meeting, Nashua, New Hampshire (11 June 2002).

44. Speaker, Department of Electrical, Computer and Systems Engineering, Boston University, Boston, Massachusetts (15 May 2002).

45. Speaker, Workshop on Quantum Computing for Physical Modeling, Martha's Vineyard, Massachusetts (9 May 2002).

46. Lecturer, "Joint MIT-Harvard-BU Lecture Series on Theoretical Chemistry," (9 January 2002).

47. Speaker, Knowledge Foundation Conference on Mesoscale Modelling, Boston, Massachusetts (13-14 August 2001).

48. Member of Topical Committee for sessions on dynamical systems and turbulence, StatPhys 21 Meeting, Cancun, Mexico (15-20 July 2001).

49. Speaker, "Tenth International Conference on Discrete Models for Fluid Dynamics" Cargese, Corsica (1-7 July, 2001).

50. Colloquium speaker, Engineering Seminar, Tufts University (28 March 2001).

51. Colloquium speaker, Department of Mathematics, Tufts University (1 December 2000).

52. Speaker, "Symposium Celebrating the Tenth Anniversary of the Center for Computational Science," Boston University (17 November, 2000).

53. Speaker, Second Greater Boston Statistical Mechanics Meeting, Brandeis University (14 October 2000).

54. Member of Scientific Program Committee, "Ninth International Conference on Discrete Models for Fluid Dynamics" Santa Fe, New Mexico (21-25 August, 2000).

55. Speaker, Gordon Conference on Computational Physics Education, Plymouth, New Hampshire (11-16 June, 2000).

56. Speaker, Materials and Manufacturing Directorate, Air Force Research Laboratory, Wright-Patterson Air Force Base, Ohio (30 May 2000).

57. Minisymposium speaker, "Role of Curvature and Hydrodynamics in Soft and Biological Matter," Third SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, Pennsylvania (22-24 May, 2000).

58. Colloquium speaker, Department of Physics, Clark University, Worcester, Massachusetts (27 April, 2000).

59. Colloquium speaker, Department of Physics, Boston University, Boston, Massachusetts (4 April, 2000).

60. Speaker, "Recent Developments in Computer Simulation Studies in Condensed Matter Physics," Center for Simulational Physics, Department of Physics and Astronomy, University of Georgia, Athens, Georgia (21-25 February, 2000).

61. Colloquium speaker, Department of Mathematics, Tufts University, Medford, Massachusetts (17 February, 2000).

62. Colloquium speaker, Department of Mathematics, Worcester Polytechnic Institute, Worcester, Massachusetts (3 February, 2000).

63. Seminar speaker, Department of Applied Mathematics, University of North Carolina, Chapel Hill, North Carolina (5 November, 1999).

64. Seminar speaker, Department of Chemistry, University of London, Queen Mary and Westfield College, London, United Kingdom (9 July, 1999).

65. Seminar speaker, Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos, New Mexico, 10 June 1999.

66. Organizing Committee member, NIST CTCMS Workshop on Hybrid Methods in Multiscale Modeling of Materials, 12-14 May 1999.

67. Speaker, Molecular Simulation '99, Advances in Mesoscale Simulation Methodology, Web-based real-time conference at URL `http://molsim.vei.co.uk/` (27 April 1999).

68. Seminar speaker, Department of Mechanical Engineering, Massachusetts Institute of Technology (6 April 1999).

69. Speaker, Silicon Graphics Scientific Visualization Seminar, Boston University, Boston, Massachusetts (31 March 1999).

70. Speaker, Conference on Computational Physics '99, American Physical Society Centennial Meeting, Atlanta, Georgia (25 March 1999).

71. Session chair, Conference on Computational Physics '99, American Physical Society Centennial Meeting, Atlanta, Georgia (25 March 1999).

72. Colloquium speaker, Department of Applied Mathematics, Brown University, Providence, Rhode Island (18 March 1999).

73. Colloquium speaker, Department of Applied Science, University of California, Davis (4 March, 1999).

74. Colloquium speaker, Department of Physics, Brandeis University, Waltham, Massachusetts (24 November 1998).

75. Seminar speaker, Air Force Research Laboratory, Space Vehicles Directorate, Hanscom AFB, Massachusetts (16 September, 1998).

76. Speaker, Conference on Computational Physics (CCP98), Granada, Spain (2-5 September, 1998).

77. Speaker, Seventh International Conference on the Discrete Simulation of Fluids, Oxford, England (14-18 July, 1998).

78. Speaker, Workshop on Computational Tools for Multiphase/Multicomponent Polymer Materials, Center for Theoretical and Computational Materials Science, National Institute of Standards and Technology (20-21 May, 1998).

79. Colloquium speaker, Department of Physics, Swarthmore College, Swarthmore, Pennsylvania (17 April, 1998).

80. Colloquium speaker, Department of Physics, University of Massachusetts, Amherst, Massachusetts (4 February, 1998).

81. Plenary speaker, Workshop on Foundations of Statistical Mechanics and Thermodynamics, Natal, Brazil (20-24 October, 1997).

82. Plenary speaker, Physics Computing '97, American Physical Society, Santa Cruz, California (August, 1997).

83. Course speaker, Department of Materials Science, Massachusetts Institute of Technology, Cambridge, Massachusetts (18 April, 1997).

84. Colloquium speaker, Department of Physics, University of Pittsburgh, Pittsburgh, Pennsylvania (10 April, 1997).

85. Seminar speaker, Physics Department, University of Massachusetts, Amherst, Massachusetts (November, 1996).

86. Seminar speaker, Center for Interdisciplinary Research on Complex Systems, Northeastern University (May 7, 1996).

87. Session organizer, Monte Carlo Methods in Computational Physics, American Physical Society Annual Meeting, Indianapolis, Indiana (May 2-5, 1996).

88. Colloquium speaker, Department of Mechanical Engineering, Massachusetts Institute of Technology (April, 1996).

89. Session speaker, American Physical Society Topical Meeting on Condensed Matter, St. Louis, Missouri (March 21, 1996).

90. IAP Seminar on Molecular Modelling, Department of Nuclear Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts (January 29, 1996).

91. 74th Statistical Physics Conference, Hill Center, Rutgers University, Piscataway, New Jersey (Dec. 17-19, 1995).

92. Nanotechnology Forum, Laboratory for Computer Science, Massachusetts Institute of Technology (December 5, 1995).

93. Colloquium speaker, Department of Physics, Boston University, Boston, Massachusetts (October 31, 1995).

94. Speaker, Nonlinear Optics Workshop, University of Arizona, Tucson, Arizona (October 1-3, 1995).

95. Lattice Gas Automata Workshop, National Institute of Standards and Technology, Gaithersburg, Maryland (August 22, 1995).

96. Seminar speaker, Department of Applied Science, University of California, Davis/Livermore, Livermore, California (May 16, 1995).

97. Seminar speaker, Department of Mechanical Engineering, Massachusetts Institute of Technology (May 8, 1995).

98. Seminar speaker, Center for Computational Science, Boston University, Boston, Massachusetts (March 17, 1995).

99. S.I.A.M. Seminar on Parallel Scientific Computation, San Francisco, California (February 17, 1995).

100. Seminar speaker, Institute for Scientific Computing, Lawrence Livermore National Laboratory, Livermore, California (February 13, 1995).

101. I.A.P. Seminar on Molecular Modelling, Department of Nuclear Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts (January 25, 1995).

102. Seminar speaker, I.B.M., T.J. Watson Research Center, Yorktown Heights, New York (November 10, 1994).

103. Seminar speaker, Center for Computational Science, Boston University, Boston, Massachusetts (October 7, 1994).

104. Colloquium speaker, Physics Department, Clark University (September 22, 1994).

105. Cellular Automata and Their Applications to Molecular Fluids, Statistical and Thermodynamics Group of the Royal Society of Chemistry, Manchester, England, United Kingdom (July, 19-20, 1994).

106. Physics of Computation Seminar, Massachusetts Institute of Technology (March 28, 1994).

107. Dynamics of Complex Systems Seminar, Boston University (February 9, 1994).

108. Second IMACS Conference on Computational Physics, International Association for Mathematics and Computers in Simulation (IMACS), St. Louis, Missouri (October 6-9, 1993).

109. Inauguration of CM-5 Computer Facility, Department of Computer Science, University of Groningen, Groningen, the Netherlands (October 1, 1993).

110. Seminar speaker, Paralleldatorcentrum, Royal Institute of Technology, Stockholm, Sweden (September 30, 1993).

111. Conference on Pattern Formation and Lattice Gas Automata, University of Waterloo, Waterloo, Ontario, Canada (June 8-12, 1993).

112. Fifth Annual Workshop on Recent Developments in Electronic Structure Algorithms, the Pennsylvania State University, University Park, Pennsylvania, May 22-24, 1993.

113. American Physical Society Meeting, Washington D.C. (April 12-16, 1993).

114. Seminar speaker, Harvard-Smithsonian Astrophysical Observatory (February 26, 1993).

115. Conference on Pattern Formation, Harvey Mudd College (February 12-13, 1993).

116. Colloquium speaker, Princeton Plasma Physics Laboratory, Princeton, New Jersey (December 2, 1992).

117. Plenary speaker, Lattice '92 Conference, Amsterdam, the Netherlands (September 14-18, 1992).

118. Seminar speaker, NORDITA, Niels Bohr Institute, Copenhagen, Denmark (August, 1992).

119. National Science Foundation Infrastructure Workshop on Supercomputing, East Lansing, Michigan (May 26, 1992).

120. Reservoir Characterization Forum, Schlumberger-Doll Research (May 18, 1992).

121. Workshop on Cellular Automata, Mathematical Sciences Institute, Cornell University (May 10, 1992).

122. Seminar speaker, Edinburgh Parallel Computer Centre, Edinburgh, Scotland, United Kingdom (March 5, 1992).

123. Colloquium speaker, Nuclear Engineering Department, Massachusetts Institute of Technology (November 25, 1991).

124. Seminar speaker, Center for Nonlinear Studies, Los Alamos National Laboratory (November 21, 1991).

125. Session organizer, (Parallel Implementations of Molecular Dynamics and Monte Carlo Codes), Supercomputing '91, Albuquerque, New Mexico (November 19-21, 1991).

126. Colloquium on French Supercomputing, Centre National de la Recherche Scientifique (CNRS), Paris, France (October 30-31, 1991).

127. Monte Carlo Methods Workshop, Argonne National Laboratory (August 12, 1991).

128. Second International Conference on Industrial and Applied Mathematics (ICIAM), Washington D.C. (July 9-12, 1991).

129. Workshop on Lattice Gases, Observatoire de la Cote d'Azure, Nice, France (June 25-28, 1991).

130. Session chairman, American Physical Society Topical Meeting on Computational Physics, San Jose, California (June 10-14, 1991).

131. Workshop on Cellular Automata, Centre for Scientific Computing, Finnish State Computer Centre (VTKK), Espoo, Finland (April 17-18, 1991).

132. Physics Forum, Massachusetts Institute of Technology (April 9, 1991).

133. Seminar speaker, Computation Department, CERN, Geneva, Switzerland (September 26, 1990).

134. Keynote speaker, Annual Seminar, Edinburgh Parallel Computing Centre (September 24, 1990).

135. Europhysics Conference on Computational Physics, Amsterdam, the Netherlands (September 13, 1990).

136. Architectures and Algorithms in Condensed Phase Simulations, St. Andrews, Scotland, United Kingdom (July 2-5, 1990).

137. Accelaration Algorithms Workshop, Boston University (April 12-13, 1990).

138. Monte Carlo and Molecular Dynamics Workshop, Department of Nuclear Engineering and Center for Space Research, Massachusetts Institute of Technology (January 23, 1990).

139. Connection Machine Users Group Meeting, Boston University (October 13, 1989).

140. Lattice Gas Methods for Partial Differential Equations, Los Alamos National Laboratory (September 6-9, 1989).

141. Lecturer, Santa Fe Institute Summer School, Santa Fe, New Mexico (June 11-17, 1989).

142. Seminar speaker, University of Edinburgh, Edinburgh, Scotland, United Kingdom (March 1, 1989).

143. Cellular Automata and Modeling of Complex Physical Systems, Les Houches, France (February 21-28, 1989).

144. Seminar speaker, University of Karlsruhe, Karlsruhe, Germany (January 19, 1989).

145. Seminar speaker, German Federal Computer Science Laboratory (GMD), Sankt Augustin, Germany (January 18, 1989).

146. Supercomputing '88, Kissimee, Florida (November 14-18, 1988).

147. Mathematical Methods in Plasma Physics, Mathematical Sciences Institute, Cornell University (October 20-23, 1988).

148. Foundations of Hydrodynamics and Discrete Kinetic Theory, Torino, Italy (September 19-23, 1988).

149. Seminar speaker, California Institute of Technology (August 10, 1988).

150. Statistical Mechanics Workshop, John von Neumann Computer Center, Princeton, New Jersey (June 23-24, 1988).

151. Colloquium speaker, Clark University, Worcester, Massachusetts (February 23, 1988).

152. Design and Application of Parallel Digital Processors, The Institution of Electrical Engineers (IEE), Lisbon, Portugal (April 11-15, 1988).

153. Seminar speaker, Plasma Fusion Center, Massachusetts Institute of Technology (February 12, 1988).

154. Colloquium speaker, Princeton Plasma Physics Laboratory, Princeton, New Jersey (October 28, 1987).

155. Sixth International Conference on Mathematical Modeling, St. Louis, Missouri (August 4, 1987).

156. Seminar speaker, National Magnetic Fusion Energy Computer Center, Livermore, California (May 7, 1987).

157. Workshop on Cellular Automata, Los Alamos National Laboratory (October 27-29, 1986).