Ronald F. Boisvert

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Vital Statistics

- Born: July 26, 1951 at Manchester, NH, USA (US citizen)
- Married: December 30, 1972 (wife's name Rita), one child
- Height: 175 cm., Weight: 72.5 kg.

Education

- Ph.D. (Computer Science), Purdue University, West Lafayette, IN, 1979.
- M.S. (Computer Science), Purdue University, West Lafayette, IN, 1977.
- M.S. (Applied Science), The College of William and Mary, Williamsburg, VA, 1975.
- B.S. (Mathematics) *summa cum laude*, Keene State College, Keene, NH, 1973.

Professional Experience

- Information Technology Laboratory (formerly Computing and Applied Mathematics Laboratory), National Institute of Standards and Technology (NIST), formerly the National Bureau of Standards (NBS), Gaithersburg, MD : *Chief*, Mathematical and Computational Sciences Division, 1998–present; *Leader*, Mathematical Software Group, 1992–1998; *Computer scientist*, 1979–1992.
- Department of Computer Sciences, Purdue University, West Lafayette, IN : *Research assistant*, 1976–1979; *Teaching assistant*, 1975–1976.
- Institute for Computer Applications in Science and Engineering (ICASE), NASA Langley Research Center, Hampton, VA : *Scientific programmer*, 1974–1975.
- Computer Center, The College of William and Mary, Williamsburg, VA : *Programmer*, 1973–1974.

Research Interests

- Quantum information
- Mathematical software, problem-solving environments
- Numerical analysis, computational science
- Network services in support of computational science
- Numerical solution of partial differential equations

Professional Activities

- Numerics Working Group, Java Grande Forum, Co-chair 1998–2004.
- International Federation for Information Processing (IFIP) Working Group on Numerical Software (WG2.5), Chair 2000–. Member 1996–2000.
- ACM Publications Board, Co-Chair 2005–, Member 1997–.
- *ACM Transactions on Mathematical Software*, Editor-in-Chief 1993–2005, Associate editor 1987–92, 2005–.
- Member of the Association for Computing Machinery (ACM), Society for Industrial and Applied Mathematics (SIAM), and IEEE Computer Society.
- Ad-Hoc Assignments:
  - Program Committee, ACM International Symposium on Symbolic Algebraic Computation, Beijing (2005)
  - Program Committee, Symposium on Scientific Computing and Mathematical Software in Emerging Science and Technology, Hong Kong (2005)
  - Outstanding Contribution to ACM Award Committee (2004–present)
  - Organizer, Workshop on the Changing Face of Mathematical Software, Washington, DC (2004)
  - Organizing Committee, NNI Grand Challenge Workshop on Metrology and Instrumentation for Nanotechnology, Gaithersburg, MD, (2004)
  - Scientific Committee, Workshop on Numerical and Symbolic Scientific Computing, Strobl, Austria (2003);
  - Search Committee for Editor-in-Chief of *ACM Transactions on Modeling and Computer Simulation* (2003);
  - Search Committee for Editor-in-Chief of *ACM Transactions on Design Automation of Electronic Systems* (2003);
  - Search Committee for Editor-in-Chief of the *ACM Journal of the Experimental Algorithmics* (2003);
  - Program Committee, Conjugate Gradient 50th Anniversary Conference, Zurich, Switzerland (2002);
  - Search Committee for Editor-in-Chief of *ACM Transactions on Computer Systems* (2002);

  - Guest Editor, Special Issue of *Mathematics and Computers in Simulation*: 1999 International Symposium on Computational Sciences, in Honor of John R. Rice (2000)
  - NIST Centennial Publications Committee (1999–2001);
  - Program Committee, ACM Java Grande Conference (1999, 2001, 2002);
  - Search Committee for Editor-in-Chief of the *Journal of the ACM* (1996, 2003);
  - Search Committee for Editor-in-Chief of *ACM Transactions on Graphics* (1996);
  - ACM Electronic Services Working Group (1996–97);
  - HPCC Blue Book Writing Group (1996–98);
  - Technical Advisory Committee for the National HPCC Software Exchange (1996–98);
  - Search Committee for Editor-in-Chief of the *Collected Algorithms of the ACM* (1993);
  - Steering Committee for the HPCC Software Exchange Working Group (1992-93);
  - Advisory Committee for the National Exemplary Parallel Code Repository (1991);
  - Program Committee for the Second International Conference on Expert Systems for Numerical Computing (1990);
  - Oversight Committee for the New Technologies/Computational Science and Engineering Programs of the NSF Division of Advanced Scientific Computing (1988);
  - site visitor, NSF Coordinated Experimental Research award program (1987, 1989).

- Proposal reviewer for the National Science Foundation, the Department of Energy, the National Aeronautics and Space Administration and the NIST Advanced Technology Program.
- Referee for *ACM Transactions on Mathematical Software, Chemical Engineering Communications, Communications of the ACM, Computing, IEEE Computational Science and Engineering, IEEE Transactions on Computers, Journal of Computational and Applied Mathematics, Journal of Computational Physics, Journal of Parallel and Distributed Computing, Journal of Sound and Vibration, Numerical Methods for Partial Differential Equations, SIAM Journal on Numerical Analysis, SIAM Journal on Scientific Computing.*

Honors

- Distinguished Scientist, Association for Computing Machinery, 2006.
- Alumni Achievement Award, Keene State College, Keene, NH, 2002.
- Bronze Medal Award for Superior Federal Service, U.S. Department of Commerce, 2001. ("For leadership in technology transfer introducing significant improvements in the Java programming language and environment for scientific computing applications.")
- Outstanding Contribution to ACM, Association for Computing Machinery, 1999. ("For his leadership and innovation as Editor-in-Chief of the Transactions on Mathematical Software and his exceptional contributions to the ACM Digital Library project.")
- Silver Medal Award for Meritorious Federal Service: U.S. Department of Commerce, 1992. ("For outstanding research and technical leadership on information management systems for scientific software.")
- Certificates of Recognition for Outstanding Performance: NIST, 1988-91; NBS, 1982-87.

- Certificates of Recognition for Sustained Superior Performance: NBS, 1987, 1982.
- Bronze Medal Award for Superior Federal Service, U.S. Department of Commerce, 1984. ("For outstanding advances in high quality software for solutions of elliptic partial differential equations at NBS.")
- Certificate of Recognition for Development of a Technical Innovation (entitled *Coupled Convection Modes at Cylindrical Crystal-Melt Interfaces*): NASA, 1983.
- Elected to the Honor Society of Phi Kappa Phi, Purdue University Chapter, 1978.

Web Services Developed

- The Guide to Available Mathematical Software[1], 1994.
- ACM Transactions on Mathematical Software[2], 1994.
- The Matrix Market[3], 1996.
- Java Numerics[4], 1998.

Major Software Packages (Co-)Developed

- ELLPACK[5]. System for elliptic boundary-value problems, 1979, 1985.
- CMLIB[6]. The NIST Core Math Library, 1987.
- HFFT3[7]. High-order accurate fast Poisson solver in 2D and 3D (ACM Algorithm 651), 1987.
- VFFTPACK[8]. Vectorized FFT package, 1989.
- VFNLIB[9]. Vectorized Bessel function evaluation (ACM Algorithm 713), 1993.
- JAMA[10]. A Java matrix package, 1998.

[1] http://math.nist.gov/gams/
[2] http://math.nist.gov/toms/
[3] http://math.nist.gov/MatrixMarket/
[4] http://math.nist.gov/javanumerics/
[5] http://www.cs.purdue.edu/ellpack/
[6] ftp://ftp.nist.gov/pub/cmlib/
[7] http://www.netlib.org/toms/651/
[8] http://www.netlib.org/vfftpack/
[9] http://www.netlib.org/vfnlib/
[10] http://math.nist.gov/javanumerics/jama/

Research Grants Awarded

- *Mathematical Foundations for a Networked Scientific Knowledge Base*, Knowledge and Distributed Intelligence Program, NSF 9980036, $1.3M, 1999-2003. *(Joint with D.L. Lozier, F.W.J. Olver, and C. Clark, NIST)*
- *Mechanisms for Adaptable and Efficient Information Retrieval Clients and Servers*, DARPA DAAH04-95-1-0595, $1.3M, 1995-8. *(Joint with J.J. Dongarra, Univ. Tenn. at Knoxville, and Eric Grosse, Bell Labs)*
- *Improving Public Access to Mathematical Computer Software*, US Department of Commerce Pioneer Fund, $15K, 1993-4.

Publications

Books

1. **R.F. Boisvert** and E.N. Houstis, eds. *Computational Science, Mathematics, and Software*, Purdue University Press, 2002, (386 pages).
2. **R.F. Boisvert** and Ping Tak Peter Tang, eds., *The Architecture of Scientific Software*, Kluwer Academic Press, Boston, 2001, (384 pages).
3. **R.F. Boisvert**, ed., *The Quality of Numerical Software, Assessment and Enhancement*, Chapman & Hall, London, 1997.
4. J.R. Rice and **R.F. Boisvert**, *Solving Elliptic Equations Using ELLPACK*, Springer-Verlag, New York, 1985, (479 pages).

Book Chapters

5. **R.F. Boisvert**, Ronald Cools, and Bo Einarsson, Assessment of Accuracy amd Reliability, in *Accuracy and Reliability in Scientific Software* (B. Einarsson, Ed.), SIAM, Philadelphia, 2005, pp. 13–32.
6. **R.F. Boisvert** and R. Pozo, Java, in *Accuracy and Reliability in Scientific Software*(B. Einarsson, Ed.), SIAM, Philadelphia, 2005, pp. 160–169.
7. John R. Rice and **R.F. Boisvert**, Scalable Software Libraries and PSEs, in *Enabling Technologies for Computational Science Frameworks, Middleware and Environments*, (Elias N. Houstis, John R. Rice, Efstratios Gallopoulos, and Randall Bramley, eds.), Kluwer Academic Publishers, Boston, 2000, pp. 33–43.
8. **R.F. Boisvert** and R.A. Sweet, Mathematical software for elliptic boundary value problems, Chapter 9 of *Sources and Development of Mathematical Software* (W. Cowell, ed.), Prentice-Hall, 1984, pp. 200–263.

In Refereed Journals

9. Xiao Tang, Lijun Ma, Alan Mink, Anastase Nakassis, Hai Xu, Barry Hershman, Joshua C. Bienfang, David Su, **R.F. Boisvert**, Charles Clark and Carl Williams, Experimental Study of High Speed Polarization-coding Quantum Key Distribution with Sifted-key Rates over Mbit/s, *Optics Express*, vol. 14, no. 6 (March 20), 2006, pp. 2062–2070.

10. **R.F. Boisvert**, Michael Donahue, Daniel Lozier, Robert McMichael, and Bert Rust, Mathematics and Metrology, *NIST Journal of Research*, vol. 106, no. 1, 2001, pp. 293-313.

11. **R.F. Boisvert**, José Moreira, Michael Philippsen, and Roldan Pozo, Numerical Computing in Java, *Computing in Science and Engineering*, vol. 3, no. 2 (March/April), 2001, pp. 18–24.

12. **R.F. Boisvert**, Mathematical Software: Past, Present and Future, *Mathematics and Computers in Simulation*, vol. 54, 2000, pp. 227–241.

13. **R.F. Boisvert**, Jack J. Dongarra , Roldan Pozo, Karin A. Remington and G. W. Stewart, Developing Numerical Libraries in Java, *Concurrency: Practice and Experience*, vol. 10, No. 11–13, 1998, pp. 1117–1129.

14. J.R. Rice and **R.F. Boisvert**, From Scalable Libraries to Problem-Solving Environments, *IEEE Computational Science and Engineering*, Fall, 1996, pp. 44–53.

15. **R.F. Boisvert**, The Architecture of a Virtual Mathematical Software Repository, *Mathematics and Computers in Simulation*, vol. 36, 1994, pp. 269-279.

16. S.R. Coriell, **R.F. Boisvert**, G.B. McFadden, L.N. Brush and J.J. Favier, Morphological stability of a binary alloy during directional solidification: initial transient, *Journal of Crystal Growth*, vol. 40, 1994, pp. 139–147.

17. **R.F. Boisvert** and Bonita V. Saunders, Portable Vectorized Software for Bessel Function Evaluation, *ACM Transactions on Mathematical Software* 18, No. 4, 1992, pp. 456–469.

18. **R.F. Boisvert**, S.E. Howe, and D.K. Kahaner, The Guide to Available Mathematical Software Problem Classification System, *Communications in Statistics – Simulation and Computation*, vol. 20, no. 4, 1991, pp. 811–842.

19. **R.F. Boisvert**, Algorithms for Special Tridiagonal Systems, *SIAM Journal on Scientific and Statistical Computing*, vol. 12, no. 2, 1991, pp. 423–442.

20. G.B. McFadden, B.T. Murray, and **R.F. Boisvert**, Elimination of Spurious Eigenvalues in the Chebyshev Tau Spectral Method, *Journal of Computational Physics*, vol. 91, No. 1, 1990, pp. 228–239.

21. **R.F. Boisvert**, The Guide to Available Mathematical Software advisory system, *Mathematics and Computers in Simulation*, vol. 31, nos. 5&6, 1989, pp. 453–464.

22. P.W. Voorhees, G.B. McFadden, **R.F. Boisvert**, and D.I. Meiron, Numerical simulation of morphological development during Ostwald ripening, *Acta Metallurgica*, vol. 36, no. 1, 1988, pp. 207–222.

23. **R.F. Boisvert**, A fourth-order accurate Fourier method for the Helmholtz equation in three dimensions, *ACM Transactions on Mathematical Software*, vol. 13, no. 3, 1987, pp. 221–234.

24. **R.F. Boisvert**, Algorithm 651: HFFT—High-order fast-direct solution of the Helmholtz equation, *ACM Transactions on Mathematical Software*, vol. 13, no. 3, 1987, pp. 235–249.

25. G.B. McFadden, **R.F. Boisvert**, and S.R. Coriell, Nonplanar interface morphologies during directional solidification II—Three-dimensional computations, *Journal of Crystal Growth*, vol. 84, 1987, pp. 371–388.

26. G.B. McFadden, P.W. Voorhees, **R.F. Boisvert**, and D.I. Meiron, A boundary integral method for the simulation of two-dimensional particle coarsening, *Journal of Scientific Computing* vol. 1, no. 2, 1986, pp. 117–144.

27. **R.F. Boisvert**, S.E. Howe, and D.K. Kahaner, GAMS: A framework for the management of scientific software, *ACM Transactions on Mathematical Software* vol. 11, no. 4, 1985, pp. 313–355.

28. G.B. McFadden, S.R. Coriell, and **R.F. Boisvert**, On double-diffusive convection with sidewalls, *Physics of Fluids* vol. 28, no. 9, 1985, pp. 2716–2722.

29. Q.T. Fang, M.E. Glicksman, S.R. Coriell, G.B. McFadden, and **R.F. Boisvert**, Convective influence on the stability of a cylindrical solid-liquid interface, *Journal of Fluid Mechanics* vol. 151, 1985, pp. 121–140.

30. S.R. Coriell, G.B. McFadden, **R.F. Boisvert**, and R.F. Sekerka, Effect of a forced Couette flow on coupled convective and morphological instabilities during unidirectional solidification, *Journal of Crystal Growth* vol. 69, no. 1, 1984, pp. 15–22.

31. G.B. McFadden, S.R. Coriell, **R.F. Boisvert**, and M.E. Glicksman, Asymmetric instabilities in buoyancy-driven flow in a tall vertical annulus, *Physics of Fluids* vol. 27, no. 6, 1984, pp. 1359–61.

32. S.R. Coriell, G.B. McFadden, **R.F. Boisvert**, M.E. Glicksman, and Q.T. Fang, Coupled convective instabilities at crystal-melt interfaces *Journal of Crystal Growth* vol. 66, no. 3, 1984, pp. 514–524.

33. G.B. McFadden, S.R. Coriell, **R.F. Boisvert**, M.E. Glicksman, and Q.T. Fang Morphological stability in the presence of fluid flow in the melt, *Metallurgical Transactions 15A* 1984, pp. 2117–2124.

34. S.R. Coriell, **R.F. Boisvert**, J.I. Mickalonis, and M.E. Glicksman, Morphological and convective instabilities during solidification, *Advances in Space Research* vol. 3, no. 5, 1983, pp. 95–101.

35. S.R. Coriell, **R.F. Boisvert**, R.G. Rehm, and R.F. Sekerka, Lateral solute segregation during unidirectional solidification of a binary alloy with a curved solid-liquid interface II: large departures from planarity, *Journal of Crystal Growth* vol. 54, no. 2, 1981, pp. 167–175.

36. **R.F. Boisvert**, Families of high order accurate discretizations of some elliptic problems, *SIAM Journal on Scientific and Statistical Computing* vol. 2, no. 3, 1981, pp. 268–284.

37. **R.F. Boisvert**, E.N. Houstis and J.R. Rice, A system for performance evaluation of partial differential equations software, *IEEE Transactions on Software Engineering* vol. SE-5, no. 4, 1979, pp. 418–425.

In Conference Proceedings

38. Xiao Tang, Lijun Ma, Alan Mink, Anastase Nakassis, Hai Xu, Barry Hershman, Joshua Bienfang, David Su, **R.F. Boisvert**, Charles Clark, and Carl Williams, Demonstration of an Active Quantum Key Distribution Network, in *Proceedings of SPIE* **6305**, Article 63050 (August 29, 2006), 6 pages.

39. Alan Mink, Xiao Tang, Lijun Ma, Tassos Nakassis, Barry Hershman, Joshua C. Bienfang, David Su, **R.F. Boisvert**, Charles W. Clark, and Carl J. Williams, High Speed Quantum Key Distribution System Supports One-Time Pad Encryption of Real-Time Video, in *Proceedings of SPIE* **6244**, pp. 62440M-1-62440M-7 (April 2006).

40. Xiao Tang, Lijun Ma, Alan Mink, Tassos Nakassis, Hai Xu, Barry Hershman, Joshua C. Bienfang, David Su, **R.F. Boisvert**, Charles W. Clark, and Carl J. Williams, Quantum Key Distribution System Operating at Sifted-key Rate Over 4 Mbit/s, in *Proceedings of SPIE* **6244**, pp. 62440P-1-62440P-8 (April 2006).

41. Xiao Tang, Lijun Ma, Alan Mink, Anastase Nakassis, Barry Hershman, Joshua Bienfang, **R.F. Boisvert**, Charles Clark and Carl Williams, High Speed Fiber-Based Quantum Key Distribution using Polarization Encoding, in *Proceedings of SPIE*, vol. 5893, Quantum Communications and Quantum Imaging III (Ronald E. Meyers, Yanhua Shih, Editors), 58931A (Aug. 25, 2005).

42. **R.F. Boisvert**, Mathematical Software: Past, Present and Future, in *Computational Science, Mathematics and Software*, (R. Boisvert and E. Houstis, eds.), Purdue University Press, 2002, pp. 3–26.

43. Michael Philippsen, **R.F. Boisvert**, Valdimir S. Getov, Roldan Pozo, Jos Moreira, Dennis Gannon, and Geoffrey C. Fox, JavaGrande - High Performance Computing with Java, in

Applied Parallel Computing. New Paradigms for HPC in Industry and Academia (T. Srevik, F. Manne, R. Moe, A.H. Gebremedhin, eds.), Lecture Notes in Computer Science, vol. 1947, 2000, pp. 20-36.

44. **R.F. Boisvert**, and Bruce Miller, Improving the Interactivity of Software and Data Repositories Using Java, in *Proceedings of the 15th IMACS World Congress on Scientific Computation, Modelling and Applied Mathematics, Volume 4: Artificial Intelligence and Computer Science*, A. Sydow, ed., Wissenshaft & Technik Verlag, Berlin, August 1997, pp. 767-772.

45. **R.F. Boisvert**, R. Pozo, K. Remington, R. Barrett and J. Dongarra, The Matrix Market: a web repository for test matrix data, in *The Quality of Numerical Software, Assessment and Enhancement*, (**R.F. Boisvert**, ed.), Chapman & Hall, London, 1997, pp. 125-137.

46. **R.F. Boisvert**, Shirley Browne, Jack Dongarra and Eric Grosse, Digital Software and Data Repositories for Support of Scientific Computing, in Advances in Digital Libraries, N. Adam, B.K. Bhargava and M. Halem, eds., Springer-Verlag, NY, 1996, (Lecture Notes in Computer Science, no. 1082), pp. 61-72.

47. **R.F. Boisvert**, A Web Gateway to a Virtual Mathematical Software Repository, *Electronic Proceedings of the Second International World Wide Web Conference*, `http://www.ncsa.uiuc.edu/SDG/IT94/Proceedings/WWW2_Proceedings.html`, 1994.

48. **R.F. Boisvert**, Jeanne L. Springmann and Michael L. Strawbridge, A Virtual Software Repository System, *Proceedings of the Thirtieth Semi-Annual Cray User Group Meeting*, Fall 1992, pp. 68–72.

49. **R.F. Boisvert**, Toward an Intelligent System for Mathematical Software Selection, in *Programming Environments for High-Level Scientific Problem Solving*, P.W. Gaffney and E.N. Houstis, eds., North-Holland, Amsterdam, 1992, pp. 79–92.

50. **R.F. Boisvert**, The Guide to Available Mathematical Software Advisory System, in *Intelligent Mathematical Software Systems*, E. Houstis, J. Rice, and R. Vichnevetsky, eds., North-Holland, Amsterdam, 1990, pp. 167–178.

51. **R.F. Boisvert**, Languages and software parts for elliptic boundary-value problems, in *Role of Language in Problem Solving II* (J.C. Boudreaux, B.W. Hamill, and R. Jernigan, eds.), North-Holland, Amsterdam, 1987, pp. 411–431.

52. **R.F. Boisvert**, A fourth order accurate fast direct method for the Helmholtz equation, in *Elliptic Problem Solvers II* (G. Birkhoff and A. Schoenstadt, eds.), Academic Press, 1984, pp. 35–44.

53. M.E. Glicksman, S.R. Coriell, G.B. McFadden, and **R.F. Boisvert**, Convectively induced crystal-melt instabilities—influence of gravity and rotation, in *Transport Phenomena in Materials Processing* (M.M. Chen, J. Mazumder, and C.L. Tucker III, eds.), American Society of Mechanical Engineers, New York, 1983, pp. 11–13.

54. **R.F. Boisvert** and R.A. Sweet, A survey of mathematical software for elliptic boundary value problems, *Proceedings of the 10th IMACS World Congress on System Simulation and Scientific Computation*, vol. 1, IMACS, New Brunswick, NJ, 1982, pp. 449–451.

55. **R.F. Boisvert**, High order compact difference formulas for elliptic problems with mixed boundary conditions, in *Advances in Computer Methods for Partial Differential Equations—IV* (R. Vichnevetsky and R.S. Stepleman, eds.), IMACS, New Brunswick, NJ, 1981, pp. 193-199.

56. **R.F. Boisvert**, Attainable accuracy of compact discretizations of the Poisson equation, in *Elliptic Problem Solvers* (M. Schultz, ed.), Academic Press, 1981, pp. 219–223.

57. **R.F. Boisvert**, High order discretizations of the Helmholtz problem which admit iterative solution techniques, in *Advances in Computer Methods for Partial Differential Equations—III* (R. Vichnevetsky and R.S. Stepleman, eds.), IMACS, New Brunswick, NJ, 1979, pp. 1–7.

58. W.G. Poole and **R.F. Boisvert**, An interactive graphics package for the automatic node renumbering of finite element matrices (with W.G. Poole), in *Proceedings of the Conference on Applications of Computer Graphics in Engineering*, National Aeronautics and Space Administration, SP-390, 1975.

Other

59. **R.F. Boisvert** and Mary Jane Irwin, Plagiarism on the Rise, *Communications of the ACM* vol. 49, no. 6 (June 2006), pp. 23–24.

60. **R.F. Boisvert**, Program Library, in *Concise Encyclopedia of Computer Science*, (Edwin D. Reilly ed.), John Wiley & Sons, West Sussex, England, 2004, pp. 640–642.

61. **R.F. Boisvert** and D.W. Lozier, Handbook of Mathematical Functions, in *A Century of Excellence in Measurements Standards, and Technology: A Chronology of Selected NBS/NIST Publications, 1901-2000*, (D. Lide, ed.), Special Publication 958, NIST, Gaithersburg, MD, January 2001, pp. 135–139.

62. **R.F. Boisvert**, Program Libraries, Numerical and Statistical, in *Encyclopedia of Computer Science*, Fourth Edition, (Anthony Ralston, Edwin D. Reilly, and David Hemmendinger, eds.), Groves Dictionaries, 2000, pp. 1620–1624.

63. **R.F. Boisvert**, James Blue, Michael Donahue, Daniel Lozier, William Mitchell, Donald Porter, and Roldan Pozo, Measurement and Standards for Computational Science and Engineering, *ITL Bulletin*, Information Technology Laboratory, National Institute of Standards and Technology, March 1999.

64. **R.F. Boisvert**, NIST's GAMS: A "Card Catalog" for the Computer User, *SIAM News*, vol. 27, no. 8, October 1994, pp. 1,8.

65. **R.F. Boisvert**, Program Libraries, Numerical and Statistical, in *Encyclopedia of Computer Science*, (Anthony Ralston and Edwin D. Reilly, eds.), Third Edition, 1993, Van Nostrad Reinhold, New York, pp. 1229–1232.

66. **R.F. Boisvert** and D.K. Kahaner, DEQSOL and ELLPACK: Problem Solving Environments for Partial Differential Equations, *ONR Far East Information Bulletin*, vol. 16, no. 1, 1991, pp. 7–19.

67. **R.F. Boisvert**, S.E. Howe, D.K. Kahaner, and J.L. Springmann, *The Guide to Available Mathematical Software*, National Institute of Standards and Technology Internal Report NISTIR 90-4237 (also PB90-216508/AS, National Technical Information Service, Springfield, VA 22161), March 1990, (682 pages).

68. **R.F. Boisvert**, S.E. Howe, and J.L. Springmann, *Internals of the Guide to Available Mathematical Software*, National Institute of Standards and Technology, NISTIR 89-4042 (also PB89-170864/AS, National Technical Information Service, Springfield, VA 22161) March 1989, (55 pages).

69. **R.F. Boisvert**, S.E. Howe, and D.K. Kahaner, *The Guide to Available Mathematical Software*, National Bureau of Standards, NBSIR 84-2824 (also PB-84171305, National Technical Information Service, Springfield, VA 22161), 1984, (448 pages).

70. **R.F. Boisvert**, S.E. Howe, and D.K. Kahaner, The GAMS classification scheme for mathematical and statistical software, SIGNUM Newsletter 18, no. 1, Jan. 1983, pp. 10–18.

71. **R.F. Boisvert**, *High Order Finite Difference Methods for Elliptic Boundary Value Problems*, Ph.D. dissertation, Purdue University, 1979.