C. T. Kelley
Curriculum Vitae

Address

Department of Mathematics and
North Carolina State University, Box 8205
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919-515-7163 (Office through June 2025)

Education

Purdue University, 1973-1976, Ph.D., Applied Mathematics.
Vanderbilt University, 1969-1973, B.A., Mathematics.
Western Kentucky Teacher Training School, 1957-1969, High School Diploma.

Employment

N.C. State University, Raleigh, North Carolina, 2021-eternity, Named Professor Emeritus.
N.C. State University, Raleigh, North Carolina, 2024-2025, Research associate.
N.C. State University, Raleigh, North Carolina, 2021-2024, Half-time retirement appointment.
N.C. State University, Raleigh, North Carolina, 2002-2021, Drexel Professor. Retired 7/1/21.
N.C. State University, Raleigh, North Carolina, 1988-2021, Professor.
N.C. State University, Raleigh, North Carolina, 1983-1988, Associate Professor.
N.C. State University, Raleigh, North Carolina, 1978-1983, Assistant Professor.
Mathematics Research Center, Madison, Wisconsin, 1977-1978, Assistant Scientist.
Purdue University, West Lafayette, Indiana, Spring 1977, Half-time Instructor.
Purdue University, West Lafayette, Indiana, 1973-1976, Teaching Assistant.

Research Interests

Numerical methods for nonlinear equations, linear equations, integral and differential equations.
Numerical optimization.
Applications to groundwater flow, semiconductor modeling, computation chemistry, quantum physics, and radiative transfer.
Parallel computing.

Professional Societies

Society for Industrial and Applied Mathematics.
SIAM Activity Group on Geosciences.
SIAM Activity Group on Optimization.
SIAM Activity Group on Computational Sciences and Engineering.
Americal Nuclear Society.
American Association for the Advancement of Science
Sigma Xi.

Professional Activities

- **Editorial Boards**
  - SIAM Review, **Editor-in-Chief, 2011–2016**.
  - SIAM Journal on Numerical Analysis (1998 – 2003, 2005 – 2020).
  - SIAM Book Series on Fundamentals of Algorithms (2003 – 2019)
  - SIAM-MPS Book Series on Optimization (1999 – 2003, 2005–2010).
  - Advances in Water Resources (2000 – 2015).
  - Pacific Journal on Optimization (2004 – 2020). **co-Editor, 2010–2020**.
  - SIAM Journal on Optimization (1990 – 2007).
    Editor-in-chief 2000 – 2004.
  - Optimization and Engineering (1999 – 2007).
  - Journal of Optimization Methods and Software (1991 – 1996).
- **Offices in Professional Societies**
  - **Chair: SIAM Board of Trustees (2012 – 2019)**
  - Member: SIAM Board of Trustees (2011 – 2019)
  - SIAM Vice President for Publications (2006 – 2009)
  - Member: SIAM Council (2002 – 2009, 2012 – 2019)
  - Vice Chair: SIAM Activity Group on Optimization (1992 – 1997).
  - Chair: SIAM Activity Group on Optimization Prize Award Committee, (1992, 1995).
- **Organization of Conferences**
  - Member, Organizing Committee: 16th Copper Mountain Conference on Iterative Methods, March 21 – March 26, 2020.
  - Member, Organizing Committee: 15th Copper Mountain Conference on Iterative Methods, March 25 – March 30, 2018.
  - Member, Organizing Committee: 14th Copper Mountain Conference on Iterative Methods, March 20 – March 25, 2016.
  - Co-chair, ICERM Topical Workshop on Numerical Methods for Large-Scale Nonlinear Problems and Their Applications, Providence RI, September 2015.
  - Member, Organizing Committee: 13th Copper Mountain Conference on Iterative Methods, April 6 – April 11, 2014.
  - Member, Organizing Committee: 12th Copper Mountain Conference on Iterative Methods, March 26 – March 30, 2012.
  - Member, Steering Committee, A symposium on eigenvalues, trust regions and reduced order modeling, Workshop in Honor of D. Sorensen's 65th Birthday, Reno, NV, June 10-11, 2011.
  - Member, Steering Committee, 19th High Performance Computing Symposium, Boston, MA, April 3–7, 2011.
  - Member, Organizing Committee: 11th Copper Mountain Conference on Iterative Methods, April 4 – April 9, 2010.
  - Member, Organizing Committee: 10th Copper Mountain Conference on Iterative Methods, April 6 – April 11, 2008.
  - Member, Steering Committee: Mathematical Programming Society 2007 Conference on Continuous Optimization, Hamilton, Ontario, CA. August 2007.
  - Member, Scientific Committee: International Conference of Applied Mathematics, Plovdiv, Bulgaria, August 2007.
  - Member, Organizing Committee: 9th Copper Mountain Conference on Iterative Methods, April 2 – April 7, 2006.
  - Co-Chair, Oranizing Committee: 2005 SIAM Annual Meeting, New Orleans, LA, July 11–15, 2005.
  - Member, Program and Steering Committees, Mathematical Programming Society 2004 Conference on Continuous Optimization, RPI, Troy, NY, Aug 2 – Aug 4, 2004.
  - Member, Organizing Committee: 8th Copper Mountain Conference on Iterative Methods, March 28 – April 2, 2004.
  - Member, Organizing Committee: Workshop on Solution Methods for Large Scale Nonlinear

Problems, Pleasanton, CA. August 6–8, 2003.
  - Member, Organizing Committee: SAMSI Environmental Program, SAMSI, RTP, NC, Spring 2003.
  - Chair, Organizing Committee: SAMSI Workshop on Simulation and Optimization, SAMSI, RTP, NC, April 28-30, 2003.
  - Member, Organizing Committee: 7th Copper Mountain Conference on Iterative Methods, March 24–29, 2002.
  - Member, Organizing Committee: 6th Copper Mountain Conference on Iterative Methods, April 2–8, 2000.
  - Co-Chair: Organizing committee for 1999 SIAM Conference on Optimization, May 1999.
  - Co-Chair: Organizing committee for 1997 SIAM-SEAS meeting, Raleigh, NC, April 4-5, 1997.
  - Member, Organizing Committee: 1995 SIAM National Meeting, October 23–26, 1995, Charlotte, NC
  - Co-Organizer: Workshop on Krylov Subspace Methods and Applications, Raleigh, NC, March 17–18, 1995. Jointly organized with I. C. F. Ipsen.
  - Member: Organizing Committee, Twelfth Parallel Circus, North Carolina Supercomputing Center, Research Triangle Park, North Carolina, October 30–31, 1992.
  - Chair, Organizing Committee: Conference on Numerical Optimization Methods in Differential Equations and Control, Raleigh, 7/15/91 – 7/17/91.
- **Organization of Minisymposia and Special Sessions**
  - Co-organizer Minisymposium on Numerical Methods for Nonlinear Equations, International Congress on Industrial and Applied Mathematics, Bejing, China, August 2015
  - Co-organizer Minisymposium on Anderson Acceleration and Applications, SIAM Conference on Computational Science and Engineering, Salt Lake City, UT, March 16, 2015
  - Organizer Session on Nonlinear Equations, Eighth International Conference on Optimization: Techniques and Applications, Dec 10–13, 2010, Shanghai, China.
  - Organizer Minisymposium on Recent Advances in Nonlinear Solvers, SIAM Annual Meeting, San Diego, CA, July 9, 2008.
  - Organizer: Minisymposium on Optimization for Geosciences Problems, SIAM Conference on Geosciences, Santa Fe, NM, Mar 19, 2007.
  - Organizer: Minisymposium on *Applications of Sampling Methods*, 2005 SIAM Conference on Optimization, Stockholm, Sweden, May 15–18, 2005.
  - Organizer: Session on *Applications*, Mathematical Programming Society 2004 Conference on Continuous Optimization, RPI, Troy, NY, Aug 2 – Aug 4, 2004.
  - Organizer: Minisymposium on *Theory and Applications of Sampling Methods in Optimization*, SIAM Annual Meeting, Montreal, CA, June 20, 2003.
  - Co-Organizer: Sessions on nonlinear solvers, 2002 Copper Mountain Conference on Iterative Methods, March 24–29, 2002.
  - Co-Organizer: Two Minisymposia on *Evolving Approaches for Modeling Porous Medium Dynamics* and *Optimization and Subsurface Flow and Transport*, Sixth SIAM Conference on Mathematical and Computational Issues in the Geosciences, Boulder, C0, June 11–14, 2001.
  - Organizer: Two sessions on optimization applications, International Symposium on Mathematical Programming, Atlanta, GA, August, 2000.
  - Organizer: Minisymposium on Derivative Free Optimization, 1999 SIAM Conference on Optimization, Atlanta, GA, May 11, 1999.
  - Organizer: Minisymposium on Large-Scale Computations in Groundwater Simulation, 1999 SIAM Conference on Mathematical and Computational Issues in the Geosciences, March 1999.
  - Organizer: Four sessions on Novel Applications, International Symposium on Mathematical Programming, Lausanne, Switzerland, August, 1997.
  - Co-Organizer: Minisymposium on Nasty Nonsmooth Nonlinear Optimization SIAM Annual Meeting, Stanford University, July 17, 1997.
  - Organizer: Mininisymposium on Trust Region Methods for Problems with Simple Bounds, SIAM Optimization Meeting, Victoria, Canada, May 1996.
  - Organizer: Minisymposium on Applications of Optimization, 1995 SIAM National Meeting,

Charlotte, NC, October, 1995.
  - Co-Organizer: Minisymposium on Industrial Application of Optimization Methods, Third International Conference on Industrial and Applied Mathematics, Hamburg, July, 1995. Jointly organized with E. W. Sachs.
  - Organizer: Minisymposium on Integral Equations and Compact Fixed Point Problems, SIAM Annual Meeting, Philadelphia, PA, July 16, 1993.
  - Organizer: Special Session on Numerical Optimization, AMS Meeting, Knoxville, TN, March 26–27, 1993.
  - Organizer: Minisymposium on Optimization in Control and Differential Equations, SIAM Conference on Optimization, Chicago, Illinois, May 12, 1992.
  - Co-organizer: Minisymposium on Nonlinear Equations and Optimization in Infinite Dimensional Spaces, International Conference on Industrial and Applied Mathematics, Washington, D. C., July 12, 1991. Jointly organized with E. W. Sachs.
  - Organizer: Minisymposium on Infinite Dimensional Problems, First International Conference on Industrial and Applied Mathematics, Minisymposium no. 56, Paris, July 3, 1987.
  - Co-organizer: Minisymposium on Quasi-Newton Methods in Infinite Dimensional Spaces, SIAM 1986 National Meeting, Boston, 7/24/86. Jointly organized with E. W. Sachs.
- **Other Professional Activities**
  - Panel Member: Panel on Interdisciplinary Research, SIAM Conference on Computational Science and Engineering, March 2015
  - Short Course on *Iterative Methods for Solving Large Systems of Nonlinear Equations*, DTU, Lyngby, Denmark. 6/27/11–7/1/11 and 3/7/14-3/14/14
  - Chair: Panel on Publishing Ethics, SIAM Annual Meeting, Pittsburg, PA, July 2009.
  - Member: North Carolina Supercomputing Center Allocation Committee (1992–2004).
  - Reviewer for several funding agencies and professional journals.
  - Panel memember for Department of Energy and National Science Foundation programs.
  - Reviewer for Mathematics Reviews.

Ph. D. Students (all from North Carolina State University)

1. Zack Morrow, "Sparse-Grid Surrogate Models in Computational Chemistry", 2021
   Present Address: Sandia National Laboratory
2. J. A. Ellis, "Performant Hybrid and Parallel Domain Decomposed Monte Carlo Methods for Radiation Transport", 2018
   Present Address: Oak Ridge National Laboratory
3. A. Toth, "A Theoretical Analysis of Anderson Acceleration and Its Application in Multiphysics Simulation for Light-Water Reactors", 2016.
   Present Address: Sandia National Laboratory
4. A. Fregosi, "Calibration of Thermal Soil Properties in the Shallow Subsurface", 2015.
   Present address: Bank of America
5. J. Nance, "Investigating Molecular Dynamics with Sparse Grid Surrogate Models", 2015.
   Present address: University of Colorado, Boulder
6. A. Costolanski, "Numerical Simulation of Resonant Tunneling Devices Described by the Wigner-Poisson Equations", 2013.
   Present address: Georgia Tech Research Institute
7. J. Willert, "Hybrid Deterministic/Monte Carlo Methods for Solving the Neutron Transport Equation and k-Eigenvalue Problem", 2013.
   Present address: Institute for Defense Analysis
8. C. Winton, "Parameter Estimation in Groundwater Models Using Proper Orthogonal Decomposition", 2012.
   Present address: US Engineer Research and Development Center
9. D. Mokrauer, "Interpolatory Surrogate Models for Light-Induced Transition Dynamics", 2012.
   Present address: BAE Systems
10. S. Pope, "Parameter Identification in Lumped Compartment Cardiorespiratory Models", 2009.
    Present address: SAS Institute
11. K. Dickson, "Condition Estimates for Numerical Continuation with Applications to Atomic and Molecular Fluids", 2008.
    Present address: MIT Lincoln Labs.
12. K. E. M. Dillard, "An Application of Implicit Filtering to Water Resources Management", 2007.
    Present address: Air Force Institute of Technology
13. J. P. Reese, "Numerical Simulation of the TCAT groundwater flow model", 2006.
    Present address: The Mathworks
14. M. I. Lasater, "Numerical Methods for the Wigner-Poisson Equations", 2005.
    Present Address: Republic Mortgage Insurance Company, Winston-Salem, NC.
15. D. E. Finkel, "Global Optimization with the DIRECT Algorithm", 2005.
    Present Address: MIT Lincoln Laboratories, Lexington, MA.
16. K. R. Kavanagh, "Nonsmooth Nonlinearities in Applications from Hydrology", 2003.
    Present Address: Clarkson University, Potsdam, NY.
17. T. S. Coffey, "Temporal and Pseudo-temporal Numerical Integration Methods, 2002.
    Present Address: Sandia National Laboratory, Albuquerque, NM.
18. J. M. Gablonsky, "Modifications of the DIRECT Algorithm", 2001.
    Present Address: The Boeing Company, Seattle, WA.
19. E. W. Jenkins, "The Application of Two-Level Domain Decomposition Preconditioners to Problems in Hydrology", 2000.
    Present Address: Clemson University.
20. T. D. Choi, "Bound-Constrained Optimization", 1999.
    Present address: Safety Insurance Company, MA
21. M. D. Tocci, "Numerical Methods for Variably Saturated Flow and Transport Models", 1998.
    Present address: The Mathworks, Natick, MA.
22. J. M. Banoczi, "Multilevel Methods for Conductive-Radiative Heat Transfer", 1997.
    Present address: US Department of Defense, Fort Meade, MD.
23. Z. Xue, "Mesh Independence of GMRES for Integral Equations", 1995.

Present address: Nomura Enterprise Inc., Chantilly, VA.
24. P. Gilmore, "An Algorithm for Optimizing Functions with Multiple Minima" 1993.
Present address: Fluence Technology, Beaverton, OR.
25. D. M. Hwang, "Convergence of Broyden's Method in Banach Spaces", 1991.
Present address: IBM, Research Triangle Park, NC.
26. L. Mukundan, "Convergence Analysis for the Harmonic Balance Method", 1991.
Present address: Mathematics Department, Ferris State Univ., Big Rapids, MI.
27. J. I. Northrup, "Pointwise Quasi-Newton Methods and Integral Equations", 1988.
Present address: TRW, Reston, VA.

Undergraduate Research Students

- C. Zapata, 2006–2008, "Calibration of Compartmental Models for Blood Flow"
- V. Bannister, 2005–2007, "Parallel Methods for Optimization".
- R. W. Darwin, 2002–2004.
- H. A. Patrick, "Implicit Filtering for Constrained Optimization Problems in the Natural Gas Pipeline Industry", 1999–2001.
- O. J. Eslinger, "Optimization of Automotive Valve Train Components with Implicit Filtering", 1998–9.

Postdoctoral Research Associates

- K. Fan, 2008–2011
- C. Kees, 2003-2005
- M. Kerr, 2002-2003
- G. Recine, 2006
- P. Zhao, 2006

Recent Research Grants, Principal Investigator.

"Anderson Acceleration", National Science Foundation #DMS-1906446,
08/16/19 – 08/15/23, $158,693.

"Add-on Proposal for W911NF-16-1-0504, Inverse Bathymetry Problems", Army Research Office,
8/16/19 – 8/22/20, $90,000.

"RTG: Randomized Numerical Analysis", with Gremaud, Ipsen, and Smith, National Science Foundation #DMS-1745654, 08/15/2018 – 08/16/2021, $2,230,067.

"NSCI SI2-SSE: Multiscale Software for Quantum Simulations of Nanostructured Materials and Devices", with Bernholc, Liu, and Briggs, National Science Foundation #OAC-1740309, 9/1/2017 – 8/31/2020, $500,000.

"Inverse Bathymetry Problems", Army Research Office, 8/16/16 — 8/15/19, W911NF-16-1-0504, $254,206.

"Iterative methods for Nonlinear Equations and Optimization", National Science Foundation, 8/1/14 -– 7/31/18, #DMS-1406349, $180,000.

"Multiscale Software for Quantum Simulations in Nano Science and Engineering", with Bernholc, Liu, Hodak, and Briggs, National Science Foundation #SI2-SSE-1339844, Aug 15, 2013 – Aug 14, 2017, $500,000.

"Consortium for Advanced Simulation of LWRs - Oak Ridge National Laboratory", Oct 1, 2010 – Sept 30, 2019, $ 11,045,764. Paul Turinsky is PI, Kelley's share is at least $400,000.

"Fast Algorithms for Model Calibration and Solvers in Ground and Surface Water Simulators", Army Research Office, # W911NF-11-1-0367, Sept 16, 2011 – Sept 2014. $230,769.

"Moment-Based Acceleration of Neutral Particle Transport", Los Alamos National Laboratory, 1/1/12 – 09/30/12, $44,785.

"Solution of Thermal Inverse Problems Using MET Station Data: ITL-1", US Army Engineer Research and Development Center, Aug 1, 2011 – Dec 31, 2011. $23,707.

"Solution of Thermal Inverse Problems with POD: CHL-7", US Army Engineer Research and Development Center, Aug 1, 2010 – July 31, 2011, # W912HZ-10-P-0221, $80,608.

"Calibration of Saturated Flow Models with POD: CHL-7", US Army Engineer Research and Development Center, June 1, 2010 – Nov 30, 2010. #W912HZ-10-P-0256, $23,129

"Collaborative Research: CDI–Type II: Revolutionary Advances in Modeling Transport Phenomena in Porous Medium Systems", National Science Foundation, 12/01/09–05/15/15, #CDI-0941253, $299,999.

"The continuous method approach for sparse feature reduction", (with L-Z. Liao and M. K. P. Ng), Hong Kong Research Grants Council, 1/1/10 – 12/31/12, $HK 590,000.

Research Grants, Principal Investigator, before 2010.

"Proposal for Defense University Research Instrumentation Program", Army Research Office, #W911NF-09-1-0159, 4/15/09 – 4/14/10, $181,000.

"Add-on Proposal for 49381-MA: Reduced Order Models for Flow Problems", US Army Research Office, April 1, 2008 – Sept 30, 2008, $40,000

"Diluted-Magnetic Semiconductor (DMS) Tunneling Devices for the Terahertz Regime: Fast high-order Wigner-Poisson Solvers", US Army Research Office, subcontract to NanoRTD, LLC., June 1, 2008 – May 31 2010, $120,000

"Promoting North Carolina's Economic Development through Strategic Water Resource Management", (with G. W. Characklis and C. T. Miller), UNC Research Comptetiveness Fund, Jan 1, 2008 – June 30, 2008. $75,332.

"Iterative Methods for Nonlinear Equations and Optimization", National Science Foundation, August 1, 2007 – July 31, 2010. #DMS-0707220, $263,084.

"Simulation of Devices with Molecular Potentials", US Army Research office, Jan 1, 2007 – September 30, 2013. #W911NF-07-1-0112 $724,996.

"Proposal for Defense University Research Instrumentation Program", Army Research Office, #W911NF-06-1-0096 5/1/06 – 4/30/07, $260,000.

"Solvers and Calibration Methods for Ground and Surface Water Models", Army Research Office, W911NF-06-1-0412, 9/1/06 – 8/31/09, $253,300

"Proposal for Defense University Research Instrumentation Program", Army Research Office, #W911NF-05-1-0171, 5/1/05 – 4/30/06, $80,512.

"Dynamical Complexity Theory of Clocked Quantum-Dot Cellular Automata Circuits", (with R. J. Trew), US Army Research Office, #W911NF-04-1-0276, 8/1/04 – 4/30/08, $695,846.

"Iterative Methods for Nonlinear Equations", National Science Foundation, #DMS-0404537, 8/15/04 – 7/31/07. $215,499.

"Workshop on Simulation and Optimization of Porous Media", US Army Research Office, #DAAD19-03-1-0115 6/1/03 – 5/31/04. $9,986.

"Nonlinear Solvers for Subsurface Flow Problems", US Army Research Office, #DAAD19-02-1-391, 9/1/02–1/31/06, $207,190.

"Proposal for Defense University Research Instrumentation Program", (with Gremaud and Li), US Army Research Office, #DAAD19-02-1-0111, 05/10/02–05/09/03. $95,443.

"Scientific Computing Research Environments for the Mathematical Sciences (SCREMS)" (with Campbell, Meyer, Ipsen), National Science Foundation, #DMS-0209695, 6/1/02–5/31/05. $57,789.

"The Science and Technology of Nano/Molecular Electronics: Theory, Simulation, and Experimental Characterization", US Army Research Office, subcontract to Stevens Institute, 6/01/01–05/31/06. $425,000.

"ITR/AP: Collaborative Research: Sampling Methods for Optimization and Control of Subsurface Flows", National Science Foundation, #DMS-0112542, 10/1/01 – 9/30/04. $166,666.

Nonlinear Equations and Optimization, National Science Foundation, #DMS-0070641, 8/01/00 – 7/31/03, $185,000

Nonlinear Solvers for Subsurface Flow Problems, US Army Research Office, #DAAD19-99-1-0186, May 1, 1999 to April 30, 2002. $200,669.

Joint NCSU-Boeing Academic-Industrial Research Project, (with S. L. Campbell, C. D. Meyer, and I. C. F. Ipsen), National Science Foundation, DMS-9714811, June 1, 1998 to May 31, 2001. $293,988.

Numerical Methods for Groundwater Flow, Cray Research Grant Program, January 1, 1998 to December 31, 1999. $16,000.

Nonlinear Equations and Bound Constrained Optimization, National Science Foundation, DMS-9700569, July 15, 1997 to Dec 31, 2000. $240,000.

Simulating Flow and Transport Phenomena in Heterogeneous Multiphase Systems, (with C. T. Miller and North Carolina Supercomputing Center) US Army Waterways Experiment Station, contract #DACA39-95-K-0098. October 1, 1995 to September 30, 1998. $242,661.

Temporal Integration for Groundwater Flow, Cray Research Grant Program, January 1, 1997 to December 31, 1997. $8,000.

Iterative Methods for Equations and Optimization, National Science Foundation, DMS-9321938, June 1, 1994 to November 30, 1997. $175,000.

Multilevel Algorithms for Constrained Optimal Control Problems, (with E. W. Sachs of Universität Trier, Germany), North Atlantic Treaty Organization, CRG 920067, April 3, 1992 to April 2, 1997. (150,000 Belgian Francs) $4,400.

Newton-like Methods for Richards' Equation, Cray, 4/1/95 – 3/31/96, $8,000

Workshop on Krylov Subspace Methods and Applications, (with Ilse Ipsen) NSF, 8/1/94 – 7/31/95, #DMS-9415578, $3,500. ARO, 1/1/95 – 12/31/95, #33564-MA-CF, $5,000.

Scientific Computation: Graduate Level Courses, Computers and Fellowships, (with Michael I. Shearer and Michael F. Singer), National Science Foundation, ASC-9024616, Feb 15, 1992 to July 31, 1993. $99,850.

Optimization Problems in Function Spaces, joint funding by the National Science Foundation, DMS-9024622, and the Air Force Office of Scientific Research, FQ8671-9101094, June 1, 1991 to May 31, 1993(AFOSR), 1994(NSF). $138,864.

Conference on Numerical Optimization Methods in Differential Equations and Control, National Science Foundation, DMS-9017572, April 15, 1991 to March 31, 1992. $6,000.

Conference on Numerical Optimization Methods in Differential Equations and Control, Army Research Office, DAAL03-91-0072, March 1, 1991 to December 31, 1991. $8,000.

Optimization Problems in Function Spaces, joint funding by the National Science Foundation, DMS-8900410, and the Air Force Office of Scientific Research, AFOSR–ISSA-890044, June 1, 1989 to May 31, 1991. $88,039.

An RF Performance Sensitivity and Process Yield Model for MIMIC CAD Applications, (with R. J. Trew), U. S. Army grant DAAL0189K0906, May 1, 1989 to August 30, 1991. $198,014.

Two Processor Alliant FX/4 System, (with R. J. Plemmons, M. Shearer, and S. J. Wright), Defense University Research Instrumentation Program, AFOSR-89-0124, January 1, 1989 to December 31 1989. $100,000.

Pointwise Quasi-Newton Methods, National Science Foundation U.S.-Federal Republic of Germany Cooperative Science Program, INT-8800560, July 1, 1988 to December 31, 1992. $8,800.

Quasi-Newton Methods for Infinite Dimensional Problems, joint funding by the National Science Foundation, DMS-8601139, and the Air Force Office of Scientific Research, AFOSR-ISSA-86-0074, June 1, 1986 to May 31, 1989. $137,522.

Iterative Methods for Singular Problems, National Science Foundation, DMS-8500944, July 1, 1985 to June 30, 1986. $16,500.

Supplement to DMS-8300841 for workstation equipment, National Science Foundation, June 1, 1984 to May

31, 1985. $9,000.

The Convergence Behavior of Iterative Methods for Singular and Nearly Singular Nonlinear Problems, (with D.W. Decker), National Science Foundation, DMS-8300841, June 1, 1983 to May 31, 1985. $72,403.

Radiative Transfer in Inhomogeneous Slabs, National Science Foundation, MCS-7901659-A01, June 1, 1981 to May 31, 1983. $20,513.

Solvability of H-equations by Iteration, National Science Foundation, MCS-7901659, June 1, 1979 to May 31, 1981. $14,048.

Books

1. C. T. Kelley, no. 20 in Fundamentals of Algorithms, SIAM, Philadelphia, 2022.
2. C. T. Kelley, *Implicit Filtering*, no. 23 in Software Environments and Tools, SIAM, Philadelphia, 2011.
3. C. T. Kelley, *Solving Nonlinear Equations with Newton's Method*, no. 1 in Fundamentals of Algorithms, SIAM, Philadelphia, 2003.
4. C. T. Kelley, *Iterative Methods for Optimization*, no. 18 in Frontiers in Applied Mathematics, SIAM, Philadelphia, 1999.
5. C. T. Kelley, *Iterative Methods for Linear and Nonlinear Equations*, no. 16 in Frontiers in Applied Mathematics, SIAM, Philadelphia, 1995.

Journal Publications

1. C. T. Kelley, *MultiPrecisionArrays.jl: A Julia package for iterative refinement*, Journal of Open Source Software, 9 (2024), doi:10.21105/joss.06698.
2. S. Pasmann, I. Variansyah, C. T. Kelley, and R. McClarren, *Mitigating spatial error in the iterative-Quasi-Monte Carlo (iQMC) method for neutron transport simulations with linear discontinuous source tilting and effective scattering and fission rate tallies*, Nuclear Science and Engineering, (2024), pp. S381–S396, doi:10.1080/00295639.2024.2332007.
3. J. P. Morgan, I. Variansyah, S. Pasmann, K. B. Clements, B. Cuneo, A. Mote, C. Goodman, C. Shaw, J. Northrop, R. Pankaj, E. Lame, B. Whewell, R. McClarren, T. S. Palmer, L. Chen, D. Anistratov, C. T. Kelley, C. Palmer, and K. E. Niemeyer, *Monte Carlo / Dynamic Code (MC/DC): An accelerated Python package for fully transient neutron transport and rapid methods development*, Journal of Open Source Software, (2024), doi:10.21105/joss.06415.
4. H.-Y. Kwon, G. M. Curtin, Z. Morrow, C. T. Kelley, and E. Jakubikova, *Adaptive basis set for practical quantum computing*, International Journal of Quantum Chemistry, 123 (2023), doi:10.1002/qua.27123. Published online April 5, 2023.
5. S. Pasmann, I. Variansyah, C. T. Kelley, and R. McClarren, *A quasi-Monte Carlo method with Krylov linear solvers for multigroup neutron transport simulations*, Nuclear Science and Engineering, 197 (2023), pp. 1159–1173, doi:10.1080/00295639.2022.2143704.
6. C. T. Kelley, *Newton's method in mixed precision*, SIAM Review, 64 (2022), pp. 191–211, doi:10.1137/20M1342902.
7. H.-Y. Kwon, Z. Morrow, E. Jakubikova, and C. T. Kelley, *Interpolation methods for molecular potential energy surface construction*, J. Phys. Chem. A, 11 (2021), pp. 9725–9735, doi:10.1021/acs.jpca.1c06812. Published electronically Nov 3, 2021.
8. Z. Morrow, H.-Y. Kwon, C. T. Kelley, and E. Jakubikova, *Efficient approximation of potential energy surfaces with mixed-basis interpolation*, J. Chem. Th. Comput, 17 (2021), pp. 5673–5683, doi:https://doi.org/10.1021/acs.jctc.1c00569.
9. Z. Morrow, H.-Y. Kwon, C. T. Kelley, and E. Jakubikova, *Reduced-dimensional surface hopping with offline–online computations*, Phys Chem Chem Phys, 23 (2021), pp. 19547–19557, doi:10.1039/D1CP03446D. Published on line Aug 26 2021.
10. W. Bian, X. Chen, and C. T. Kelley, *Anderson acceleration for a class of nonsmooth fixed-point problems*, SIAM J. Sci. Comp., 43 (2021), pp. S1–S20, doi:10.1137/20M132938X.

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Articles in Conference Proceedings

1. S. Pasmann, I. Variansyah, C. Kelley, and R. G. McClarren, *Reducing spatial discretization error with linear discontinuous source tilting in iterative quasi-monte carlo for neutron transport*, in 2023 ANS Winter Meeting and Technology Expo, vol. 129, Washington D.C., 11 2023, pp. 414–417.

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3. Z. Wang, A. Chakrabortty, C. T. Kelley, X. Feng, and P. Franzon, *Improved numerical methodologies on power system dynamic simulation using gpu implementation*, in 2019 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT), 2019, doi:10.1109/ISGT.2019.8791667.

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Articles Awaiting Publication

1. X. Chen and C. T. Kelley, *Min-max optimization for robust nonlinear least squares problems*, 2024, arXiv:2402.12679. to appear in IMA J. Numer. Anal.

Preprints

1. C. T. Kelley, *Using MultiPrecisonArrays.jl: Iterative refinement in Julia*, 2024, arXiv:2311.14616.

2. C. T. Kelley, *Interprecision transfers in iterative refinement*, 2024, arXiv:2407.00827. submitted for publication.

Invited Addresses

1. **Anderson acceleration: Software, storage, and a multi-physics example**, July 26 2023. ICERM: Program on Acceleration and Extrapolation Methods.
2. **Anderson acceleration: Convergence theory and numerical experience**, October 18 2022. Applied and Computational Mathematics Division Seminar Series, National Institute of Standards and Technology.
3. **Newton's method in mixed precision**, December 8 2021. HKBU Mathematics Conference for Faculty of Science 60th Anniversary, Hong Kong Baptist University.
4. **Anderson acceleration for a class of nonsmooth fixed-point problems**, May 19 2021. Minisymposium on Theory and Practice of Extrapolation and Acceleration Methods, SIAM Conference on Applied Linear Algebra.
5. **Newton's method in mixed precision**, March 25 2021. XSDK-MULTIPRECISION Seminar.
6. **Anderson acceleration for nonsmooth problems**, March 4 2021. Minisymposium on Advances in Nesterov and Anderson acceleration with applications in machine learning, SIAM Conference on Computation Science and Engineeering.
7. **Anderson acceleration: Convergence theory and numerical experience**, Jan 24 2021. Columbia University Colloquium, New York, NY.
8. **Newton's method in mixed precision**, Nov 13 2020. SIAM Student Chapter, Hong Kong Polytechnic University, Hong Kong, China.
9. **Anderson acceleration: Convergence theory and numerical experience**, Nov 6 2020. Oregon State University Applied Mathematics and Computation Seminar, Eugene, OR.
10. **Newton's method in mixed precision**, Oct 16 2020. Computational and Applied Mathematics Seminar, University of Wyoming, Laramie, WY.
11. **Anderson acceleration: Convergence theory and numerical experience**, Jan 16 2020. Hong Kong University Applied Mathematics Colloquium, Hong Kong, China.
12. **Anderson acceleration: Convergence theory and numerical experience**, May 3 2019. PolyU AMA-RIKEN AIP Joint Workshop on Optimization and Machine Learning, Hong Kong, China.
13. **Anderson acceleration: Convergence theory and numerical experience**, April 5 2019. Colloquium, Department of Mathematics, UNC-Greensboro, Greensboro, NC.
14. **Superlinear convergence and mesh independence of Krylov methods for eigenvalue computations**, January 24 2019. Greater Bay Area Workshop on Computational Optimization, Hong Kong Polytechnic University, Hong Kong, China.
15. **Anderson acceleration and EDIIS**, January 28 2019. Opening Ceremony of the CAS AMSS-PolyU Joint Laboratory of Applied Mathematics and the CAS GIG-PolyU Joint Laboratory of the Guangdong-Hong Kong- Macao Greater Bay Area for the Environment.
16. **Anderson acceleration: Convergence theory and numerical experience**, May 10 2018. Numerical Analysis Seminar, Dept of Mathematics, City University of Hong Kong.
17. **Convergence analysis of the EDIIS method**, May 5 2018. SIAM Conference on Applied Linear Algebra, Minisymposium on Numerical Methods for Ground and Excited State Electronic Structure Calculation.
18. **Newton's method and continuation**, November 17 2017. 37th Annual Mathematics Symposium, Western Kentucky University, Bowling Green KY.
19. **Anderson acceleration**, August 4 2017. Colloquium Dept of Mathematics, Hunan First Normal University, Changsha, China.
20. **Anderson acceleration**, June 7 2017. Polynomials, Kinematics, and Robotics: A conference in honor of Charles Wampler, Notre Dame University, South Bend, IN.
21. **Anderson acceleration**, April 3 2017. Colloquium Department of Applied and Computational Mathematics, Rice University, Houston, TX.
22. **Anderson acceleration**, March 17 2017. Courant Institute Numerical Analysis Seminar, New York, NY.
23. **Sparse grids and computational chemistry**, October 4 2016. 4th Workshop on Sparse Grids and Applications, Miami, FL.
24. **Local improvement results for Anderson acceleration and inaccurate function evalua-**

tions, June 3 2016. 5th Workshop on Optimization and Risk Management, Hong Kong Polytechnic University, Hong Kong, China.

25. **Pseudo-transient continuation**, September 10 2015. Colloquium, Department of Mathematics, Tulane University, New Orleans, LA.
26. **Anderson acceleration- convergence theory and numerical experience**, August 31 2015. Workshop on Numerical Methods for Large-Scale Nonlinear Problems and Their Applications, ICERM, Providence RI, August 2015.
27. **Newton-Krylov methods for problems with embedded Monte Carlo simulations**, June 5 2015. Hengyang First Normal University, Henyang, Hunan, China.
28. **Optimization for problems with hidden constraints**, May 31 2015. Hunan First Normal University, Changsha, Hunan, China.
29. **Anderson acceleration**, May 30 2015. Hunan First Normal University, Changsha, Hunan, China.
30. **Nonlinear solvers**, May 30 2015. Hunan First Normal University, Changsha, Hunan, China.
31. **Newton-Krylov methods for problems with embedded Monte Carlo simulations**, May 13-14 2015. Workshop on Optimization and Data Analytics, Hong Kong Polytechnic University, Hong Kong, China.
32. **Sparse grids, quantum chemistry, and solar energy**, February 2 2015. Hong Kong Polytechnic University, Hong Kong, China.
33. **Implicit filtering and hidden constraints**, July 30 2014. Optimization 2014 Conference, Guimares, Portugal.
34. **Implicit filtering and hidden constraints**, July 22 2014. Sandia National Laboratory, Albuquerque, NM.
35. **Newton-Krylov methods for problems with embedded Monte Carlo simulations**, July 9 2014. SIAM 2014 Annual Meeting, Minisymposium on Advances in Krylov and Extended Krylov Subspace Methods, Chicago, IL.
36. **Anderson acceleration**, May 16 2014. SIAM Student Chapter, Hong Kong Polytechnic University, Hong Kong, China.
37. **Implicit filtering and imaging**, May 13 2014. SIAM Conference on Imaging, Hong Kong, China.
38. **Calibration of a novel density-dependent flow model with implicit filtering**, Dec 16–18 2013. Second Conference on Engineering and Computational Mathematics, Hong Kong Polytechnic University, Hong Kong, China.
39. **Pseudo-transient continuation**, October 2013. Outstanding Alumni Colloquium, Purdue University.
40. **Newton's method for Monte Carlo based residuals**, April 25 2013. CUNY Applied Mathematics Symposium, New York, NY.
41. **Sparse interpolatory models for molecular dynamics**, Feb 26, 2013. Minisymposium on The Realities of Using Derivative-Free Optimization Techniques, SIAM 2013 Conference on Computational Science and Engineering, Boston, MA.
42. **Sampling methods and derivative-free optimization**, Feb 7, 2013. Hong Kong Polytechnic University.
43. **Randomized nonlinear equations in neutronics**, October 19–22, 2012. Eleventh International Symposium on Distributed Computing and Applications to Business, Engineering and Science, Guilin, China.
44. **Randomized nonlinear equations in neutronics**, Sept 7, 2012. Purdue University Computational and Applied Mathematics Colloquium, West Lafayette, IN.
45. **Sparse interpolatory reduced-order models for simulation of light-induced molecular transformations**, April 2–4 2012. Minisymposium on Reduced-Order Models, SIAM Conference on Uncertainty Quantification, Raleigh, NC.
46. **Randomized nonlinear equations in neutronics**, July 3, 2012. Lawrence Livermore National Laboratory Seminar, Livermore CA.
47. **Sparse interpolatory models for molecular dynamics**, Aug 19–24 2012. International Symposium on Mathematical Programming, Berlin, Germany.
48. **Randomized nonlinear equations in neutronics**, May 25–6, 2012. Second Workshop on Computational Mathematics, Hong Kong Polytechnic University, Hong Kong, China.

49. **POD methods for inverse problems in saturated flow computations**, July 21, 2011. Minisymposium on Practical Applications of Optimization with PDE constraints, International Conference on Industrial and Applied Mathematics, Vancouver, Canada.
50. **Sparse interpolatory reduced-order models for simulation of light-induced molecular transformations**, November, 2011. 8th International Conference on Numerical Optimization and Numerical Linear Algebra, Xia Men, China.
51. **Rank-deficient and ill-conditioned nonlinear least squares problems**, July 29, 2011. Changsha University, Changsha, China.
52. **Reduced order models for gradient flow integration**, July 29, 2011. Hunan University, Changsha, China.
53. **Reduced order models for gradient flow integration**, May, 2011. Minisymposium on Nonlinear Programming: SIAM Conference on Optimization, Darmstadt, Germany.
54. **Reduced order models for gradient flow integration**, May 13, 2011. University of Trier, Trier, Germany.
55. **Rank-deficient and ill-conditioned nonlinear least squares problems**, April 9, 2011. 2011 SIAM Student Chapter Conference, Old Dominion University, Norfolk, VA.
56. **Parallel computation of surrogate models for potential energy surfaces**, Feb 28 – March 4, 2011. SIAM Conference on Computational Science and Engineering, Minisymposium on Derivative-Free Optimization and Applications, Reno, NV.
57. **Rank-deficient and ill-conditioned nonlinear least squares problems**, Nov 12, 2010. Courant Institute Numerical Analysis Seminar, New York, NY.
58. **Rank-deficient and ill-conditioned nonlinear least squares problems**, June 22–24, 2010. SIAM Keynote Address, Sixth East Asia SIAM Conference, Kuala Lumpur, Malaysia.
59. **Rank-deficient and ill-conditioned nonlinear least squares problems**, June 18, 2010. Workshop for the 60th birthday of Prof. E. W. Sachs, Trier, Germany.
60. **Nonlinear least squares**, October 5–9, 2009. MBS workshop on Computational challenges in integrative biological modeling, Columbus, OH.
61. **Rank-deficient and ill-conditioned nonlinear least squares problems**, Sept 1, 2009 2009. IFIP Working Group 2.5 Symposium, Raleigh, NC.
62. **IMFIL: Implicit Filtering in MATLAB**, August 24, 2009. Invited Session on Derivitive-Free Algorithms: Software, International Symposium on Mathematical Programming, Chicago, IL.
63. **Pseudo-transient continuation**, 2009. Humboldt University, Berlin, Germany.
64. **Groundwater model calibration with POD**, June 15, 2009. SIAM Conference on the Geosciences, Minisymposium on Simulation-Based Optimization in Hydrology, Leipzig, Germany.
65. **Rank-deficient nonlinear equations and least squares problems**, May 27–29, 2009. International Conference on Engineering and Computational Mathematics, Hong Kong, China.
66. **POD models for inverse problems in hydrology**, January 26–30 2009. Oberwolfach Conference on Numerical Techniques for Optimization Problems with PDE Constraints, Oberwolfach, Germany.
67. **Fast algorithms for integral equations**, December 8 – 12, 2008. IMA Workshop on Solvation, Minneapolis, MN.
68. **Pseudo-transient continuation**, November 12, 2008. Computer Science and Mathematics Seminar, Oak Ridge National Laboratory, Oak Ridge TN.
69. **Optimal design with implicit filtering**, June 13, 2008. U. S. Army Engineer Research and Development Center, Vicksburg, MS.
70. **Optimal design of municipal water supply portfolios with implicit filtering**, May 28, 2008. Department of Applied Mathematics, Hong Kong Polytechnic University.
71. **Optimal design of municipal water supply portfolios with implicit filtering**, May 6, 2008. Fields Industrial Optimization Seminar, Fields Institute, Toronto, Canada.
72. **Solution algorithms for nonlinear equations I: Applications**, January, 2008. Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil.
73. **Solution algorithms for nonlinear equations II: Algorithms**, January, 2008. Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil.
74. **Pseudo-transient continuation**, January, 2008. Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil.

75. **Pseudo-transient continuation**, October 4, 2007. First Annual DFG Conference on Optimization with PDE Constraints.
76. **Pseudo-transient continuation**, August 16, 2007. Third International Conference of Applied Mathematics, Plovdiv, Bulgaria.
77. **Implicit filtering**, June 12, 2007. Sandia National Laboratory, Albuquerque, NM.
78. **Projected pseudo-transient continuation**, April 18, 2007. Florida State University, Department of Computational Science.
79. **Constrained pseudo-transient continuation**, October 20, 2006. Courant Institute, New York, NY.
80. **Implicit filtering and applications**, July 11, 2006. Minisymposium on Derivative-Free Optimization, SIAM 2006 Annual Meeting.
81. **A scalable preconditioner for the Wigner-Poisson equations**, May 25, 2006. NECIS seminar, Sandia National Laboratory, Albuquerque, NM.
82. **Model reduction for time-independent PDE simulator calibration**, May 17–19 2006. Conference on Adaptive Model Reduction Methods for PDE Constrained Optimization, Rice University, Houston, Texas.
83. **Pseudo-transient continuation**, April 18 2006. SIAM Student Chapter, U South Carolina.
84. **Pseudo-transient continuation**, March, 20 2006. Applied Mathematics Seminar, Rice Universitiy.
85. **Model reduction for nonlinear least squares**, March 2 2006. Oberwolfach conference on Nonlinear Optimization with PDE Constraints.
86. **The pseudo-transient continuation method for solving nonlinear equations**, February 7 2006. High Performance Computing Center Distinguished Lecture Series, Hong Kong Baptist University.
87. **Implicit filtering**, January 24 2006. Operations Research Department, Chinese University of Hong Kong.
88. **Implicit filtering**, May 16, 2005. SIAM 2005 Conference on Optimization, Minisymposium on Derivative Free Optimization, Stockholm, Sweden.
89. **Continuation algorithms for parameter dependent compact fixed point problems**, May 5, 2005. 7th IMACS International Symposium on Iterative Methods in Scientific Computing, Fields Institute and the University of Toronto, Toronto, Canada.
90. **Optimal design of groundwater remediation systems with sampling methods**, March 27, 2005. SIAM-SEAS 2005 Meeting, Charleston, SC.
91. **Continuation algorithms for parameter dependent compact fixed point problems**, Jan 21, 2005. Applied Mathematics Colloquium, University of North Carolina, Chapel Hill, NC.
92. **Continuation algorithms for parameter dependent compact fixed point problems**, November 8, 2004. Duke University, Durham, NC.
93. **Sampling methods for optimization**, October 20, 2004. OR Department, Univeristy of North Carolina, Chapel Hill, NC.
94. **Solution of the Wigner-Poisson equations for RTDs**, September 15, 2004. 2004 International Symposium on Distributed Computing and Applications to Business, Engineering, and Science, Session on Distributed Applications in Engineering, Wuhan, China.
95. **Implicit methods for reactive transport**, July 14, 2004. SIAM 2004 Annual Meeting, Minisymposium on Transitioning Nonlinear, Time-dependent Codes From Explicit to Implicit Formulations.
96. **Continuation algorithms for parameter dependent compact fixed point problems**, July 1, 2004. The Boeing Company, Seattle, WA.
97. **Continuation algorithms for parameter dependent compact fixed point problems**, June 22 2004. Sandia National Laboratory, Livermore CA.
98. **Simulation of nondifferentiable models for groundwater flow and transport**, June 14, 2004. Computational Methods in Water Resources 2004 International Conference, Chapel Hill, North Carolina.
99. **Continuation algorithms for parameter dependent compact fixed point problems**, April 8, 2004. Columbia University, New York, NY.
100. **Pseudo-transient continuation for nonsmooth nonlinear equations**, September 20, 2003.

Conference on Perspectives on Nonlinear Equations and Optimization, in honor of Homer Walker's 60th birthday, Worcester, MA.

101. **Design of groundwater remediation systems with sampling methods**, August 18-22, 2003. special session on PDE-Constrained Optimization, 18th International Symposium on Mathematical Programming, Copenhagen, Denmark.
102. **Pseudo-transient continuation for nonsmooth nonlinear equations**, July , 2003. Workshop on Solution Methods for Large Scale Nonlinear Problems, Livermore, CA.
103. **Design of groundwater remediation systems with sampling methods**, April 1, 2003. Numerical Analysis Seminar, Computer Science Department, University of Maryland, College Park, MD.
104. **Pseudo-transient continuation**, May 5 2003. Center for the Advanced Engineering of Fibers and Films, Clemson University, Clemson, SC.
105. **Design of groundwater remediation systems with implicit filtering**, Feb, 2003. Numerical Techniques for Optimization Problems with PDE Constraints, Oberwolfach, Germany.
106. **Design of groundwater remediation systems with implicit filtering**, Jan 21, 2003. The Boeing Company, Seattle, WA.
107. **Sampling methods and implicit filtering**, October 23, 2002. Stevens Institute of Technology, Hoboken, NJ.
108. **Optimal design using sampling methods**, August 19, 2002. Second International Workshop on Optimization and Control with Applications, Tunxi, China.
109. **Temporal integration for subsurface flow problems**, June 28–28, 2002. XIV International Conference on Computational Methods in Water Resources, Session on Mathematical and Numerical Modeling for Subsurface and Surface Problems, Delft, The Netherlands.
110. **Algorithmic decisions in implicit filtering**, June 24, 2002. Department of Statistics, Probability and Operations Research, Delft University of Technology, Delft, The Netherlands.
111. **Optimal design using sampling methods**, May 20-23, 2002. SIAM 7th Conference on Optimization, Toronto, Canada.
112. **Algorithmic decisions in implicit filtering**, May 16–17 2002. Second Workshop on Nonlinear Optimization: Theoretical Aspects of Surrogate Optimization, Center for Mathematics - University of Coimbra, Coimbra, Portugal.
113. **Fast algorithms for the Ornstein-Zernike equations**, April 12 2002. Courant Institute, New York, NY.
114. **Fast algorithms for the Ornstein-Zernike equations**, February 19, 2002. Latsis-Symposium 2002, Iterative Solvers for Large Linear Systems, Switzerland.
115. **Globally convergent algorithms for nonsmooth nonlinear equations in computational fluid dynamics**, October 12, 2001. International Conference on Recent Advances in Computational Mathematics, Matsuyama, Japan.
116. **Theory and applications of implicit filtering**, July 25, 2001. 20th International Federation of Information Processing TC7 Conference on System Modelling and Optimization, Trier, Germany.
117. **Domain decomposition methods for unsaturated flow simulations**, February 8, 2001. Universität Trier, Mathematics Department, Trier, Germany.
118. **Fast algorithms for compact fixed point problems**, January 23, 2001. Texas Institute for Computational and Applied Mathematics, Austin, TX.
119. **Temporal integration for unsaturated flow problems**, January 23, 2001. Center for Subsurface Modeling, University of Texas, Austin, TX.
120. **Implicit filtering and applications**, October 27, 2000. First Sino-Japan Optimization Meeting, Hong Kong, China.
121. **Domain decomposition methods for unsaturated flow simulations**, August 15, 2000. University of Houston, Houston, TX.
122. **An integro-partial-differential-algebraic equation for powder consolodation**, July 27, 2000. Workshop on Solution Methods for Large Scale Nonlinear Problems, Pleasanton, CA.
123. **Implicit filtering and applications**, April 25, 2000. Sandia National Laboratory, Livermore, CA.
124. **Optimization of noisy functions and the implicit filtering algorithm**, March 18, 2000. University of the Philippines, Quezon City, Philippines.

125. **Optimization of noisy functions and the implicit filtering algorithm**, February 21, 2000. Rice University, Houston, TX.
126. **Nonsmooth nonlinearities and 3D groundwater flow simulations**, October 15, 1999. Courant Institute, New York, NY.
127. **Nonlinear solvers and preconditioners in groundwater flow simulations**, October 4 1999. Lawrence Livermore National Laboratory, Livermore, CA.
128. **Nonlinear solvers and preconditioners in groundwater flow simulations**, September 28 1999. Workshop on Parallel Algorithms, U.S. Army Engineer Research and Development Center, Vicksburg MS.
129. **Convergence behavior for Krylov space linear solvers: Examples and applications**, July 6, 1999. Minisymposium on Analysis of Iterative Methods for Linear Equations and Spectrum, International Conference on Industrial and Applied Mathematics, Edinburgh, Scotland.
130. **Implicit filtering: Theory and implementation**, May 26, 1999. City University of Hong Kong, Hong Kong, China.
131. **Nonlinear solvers and preconditioners in groundwater flow simulations**, May 24, 1999. Chinese University of Hong Kong, Hong Kong, China.
132. **Sampling methods that approximate gradients**, May 21, 1999. City University of Hong Kong, Hong Kong, China.
133. **Direct search methods and approximate gradients**, May 10, 1999. Minisymposium on Recent Advances in Direct Search Methods, SIAM Conference on Optimization, Atlanta, GA.
134. **Noisy optimization problems: Applications and methods**, December 20, 1998. International Mathematics Conference and Annual Meeting of the Taiwan Math Society, National Taiwan Normal University, Taipei, Taiwan.
135. **Sampling methods that approximate gradients**, December 21, 1998. National Chiao Tung University, Hsin-Chu, Taiwan.
136. **Multilevel methods for conductive-radiative heat transfer**, November 6, 1998. University of North Carolina Applied Mathematics Seminar.
137. **Sampling methods that approximate gradients**, October 27 1998. Invited Session on Search Algorithms, INFORMS Fall Meeting, Seattle, WA.
138. **Implicit Filtering and Quadratic Models**, February 19, 1998. Approximate Models Workshop, Rice University, Houston, TX.
139. **Convergence Analysis of Pseudo-Transient Continuation**, October 31, 1997. Department of Mathematics Colloquium, Worcester Polytechnic Institute, Worcester, MA.
140. **The Simplex Gradient and Algorithms for Noisy Optimization Problems**, October 3, 1997. AFOSR Workshop on Optimal Design and Control, Crystal City, Maryland.
141. **Detection and Remediation of Stagnation in the Nelder-Mead Algorithm Using a Sufficient Decrease Condition**, April 29, 1997. Graduiertenkolleg Mathematische Optimierung, Universität Trier, Trier, Germany.
142. **Nonlinear Equations: Applications, Algorithms, Software**, Mar 17, 1997. A one day short course given at Sommerschule über Nichtlineare Gleichungssysteme, Hamburg, Germany.
143. **Linear Compact Fixed Point Problems**, July 29, 1996. First of a series of three talks on modern numerical methods for compact fixed point problems, National Chiao Tung University, Hsin-Chu, Taiwan.
144. **Nonlinear Problems**, July 31, 1996. Second of a series of three talks on modern numerical methods for compact fixed point problems, National Chiao Tung University, Hsin-Chu, Taiwan.
145. **Applications**, July 31, 1996. Third of a series of three talks on modern numerical methods for compact fixed point problems, National Chiao Tung University, Hsin-Chu, Taiwan.
146. **Trust Region Methods for Boundary Control Problems**, July, 14–20 1996. International Conference on Control and Estimation of Distributed Parameter Systems, Vorau, Austria.
147. **Design of Automotive Valve Trains with Implicit Filtering**, May 20, 1996. Mininisymposium on Multidisciplinary Design Optimization, SIAM Conference on Optimization, Victoria, BC, Canada.
148. **Solution of the Pressure Head Form of Richards' Equation by the Method of Lines**, September 14, 1995. DOE Workshop on Iterative Methods for Large Scale Nonlinear Problems,

Logan, Utah.

149. **Solution of Noisy Paramater ID Problems with Implicit Filtering**, July 17, 1995. IMA Summer program on Large Scale Optimization, IMA, Minneapolis, MN.
150. **Superlinear Convergence of GMRES**, July 3, 1995. Graduiertenkolleg Mathematische Optimierung, Universität Trier, Trier, Germany.
151. **Linear and Nonlinear Solvers for Codes for Flow in Porous Media**, March 29, 1995. Department of Environmental Sciences and Engineering, University of North Carolina, Chapel Hill, NC.
152. **Implicit Filtering and Noisy Optimization Problems**, November 15 1994. ICASE, NASA Langley Research Center, Hampton, VA.
153. **Implicit Filtering and Noisy Optimization Problems**, October 25, 1994. IFIP/WG 2.5: Workshop on Current Issues in Numerical Software, Raleigh, NC.
154. **Implicit filtering and noisy optimal design problems**, August 16, 1994. Minisymposium on Useful Nonstandard Methods: 15th International Symposium on Mathematical Programming, Ann Arbor, Michigan.
155. **Implicit Filtering and Noisy Optimal Design Problems**, April 9, 1994. Workshop on Optimal Design, Blacksburg VA.
156. **Implicit Filtering Methods for Noisy Optimization Problems**, January 26, 1994. University of North Carolina at Wilmington.
157. **Multilevel Source Iteration Accelerators for the Linear Transport Equation in Slab Geometry**, October 28, 1993. Argonne National Laboratory.
158. **Multilevel source iteration accelerators for the linear transport equation in slab geometry**, August 5, 1993. Lawrence Livermore National Laboratory.
159. **Identification of the Support of Nonsmoothness**, February 16, 1993. Conference on Large Scale Optimization, Gainesville, FL.
160. **Multilevel Projected Newton-like Algorithms for Optimal Control Problems**, September 18, 1992. Minisymposium on Numerical Methods in Optimal Control, SIAM Conference on Control and its Applications, Minneapolis, Minnesota.
161. **Iterative Methods for Compact Fixed Point Problems**, July 23, 1992. Minisymposium on Iterative methods for large-scale nonlinear systems, SIAM National Meeting, Los Angeles, California.
162. **Nonlinear Problems in Computer Aided Design for Microwave Devices**, June 15, 1992. Universität Trier, Trier, Germany.
163. **Nondifferentiable Optimization in Competitive Systems**, November 4, 1991. Special session on nonlinear programming, ORSA/TIMS National Meeting, Anaheim, California.
164. **Fast Algorithms for Compact Fixed Point Problems**, September 10, 1991. 16. Symposium on Operations Research, Universität Trier, Trier, Germany.
165. **Adaptive Multilevel Methods for Compact Fixed Point Problems**, July 9, 1991. Minisymposium on Parallel Computing and Optimization, International Conference on Industrial and Applied Mathematics, Washington, D. C.
166. **Fast Algorithms for Nonsmooth Compact Fixed Point Problems**, June 10, 1991. Universität Trier, Trier, Germany.
167. **Pointwise quasi-Newton Methods for Control**, May 14, 1991. Special session on nonlinear programming, ORSA/TIMS National Meeting, Nashville, Tennessee.
168. **Convergence Properties of Broyden's Method in Infinite Dimensional Spaces**, January 28, 1991. Rice University, Houston, Texas.
169. **Pointwise Quasi-Newton Methods for Optimal Control Problems**, November 7, 1990. Second SIAM Conference on Linear Algebra, Signals, Systems, and Control, Minisymposium on Numerical Aspects of Optimal Control, San Francisco, CA.
170. **Convergence Properties of Broyden's Method in Infinite Dimensional Spaces**, November 2, 1990. Colorado State University, Fort Collins, CO.
171. **Secant methods in Banach Spaces**, October 30, 1990. Special session on nonlinear programming, ORSA/TIMS National Meeting, Philadelphia, PA.
172. **Convergence Properties of Broyden's Method in Infinite Dimensional Spaces**, September 10, 1990. Institute of Statistical Mathematics, Tokyo, Japan.

173. **Convergence Properties of Broyden's Method in Infinite Dimensional Spaces**, September 7, 1990. Kyoto University, Kyoto, Japan.
174. **Convergence Properties of Broyden's Method in Infinite Dimensional Spaces**, September 5, 1990. Kyushu University, Fukuoka, Japan.
175. **Fast Algorithms for Compact Fixed Point Problems**, September 1, 1990. International Symposium on Computational Mathematics, Ehime University, Matsuyama, Japan.
176. **Fast Quasi-Newton Methods for Control**, July 17, 1990. SIAM Annual Meeting, Minisymposium on Numerical Methods in Control, Chicago, IL.
177. **Superlinear Convergence Results for Broyden's Method for Nonlinear Equations in Banach Spaces**, June 1, 1990. Universität Trier, Trier, Germany.
178. **Mesh Independent, Globally Convergent Algorithms for Noninear Equations in Banach Spaces**, October 16, 1989. Special session on nonlinear programming, ORSA/TIMS National Meeting, New York, NY.
179. **Fast Newton-like Methods for Control Problems**, August 28, 1989. DOE Miniconference on Newton-like Methods for Large Scale Nonlinear Systems, Logan, Utah.
180. **Sequential Quadratic Programming for Parameter Identification Problems**, June 26, 1989. 5th IFAC Symposium on Control of Distributed Parameter Systems, Perpignan, France.
181. **Fast Newton-like Methods for Control Problems**, June 22, 1989. International Conference on Numerical Methods in Optimization and Optimal Control, Trier, Germany.
182. **Fast Algorithms for Nonlinear Integral Equations**, June 19, 1989. Universität Trier, Mathematics Department, Trier, Germany.
183. **Fast Algorithms for Integral Equations in Transport Theory**, May 22, 1989. 11th International Conference on Transport Theory, Blacksburg, VA.
184. **Quasi-Newton Methods in Function Spaces**, May 12, 1989. Courant Institute, New York, NY.
185. **Fast Algorithms for Nonlinear Integral Equations**, April 13, 1989. Worcester Polytechnic Institute, Worcester, MA.
186. **Fast Algorithms for Nonlinear Integral Equations**, April 4, 1989. SIAM Conference on Optimization, Minisymposium on Infinite Dimensional Problems, Boston, MA.
187. **Fast Algorithms for Some Boundary Control Problems**, November 11, 1988. Virginia Polytechnic Institute and State University, Blacksburg, VA.
188. **Operator Prolongation Methods for Nonlinear Equations**, July 21, 1988. AMS-SIAM Summer Seminar in Applied Mathematics, Computational Solution of Nonlinear Systems of Equations.
189. **Newton-like Methods in Banach Spaces**, February 9, 1988. Center for Applied Mathematics, Purdue University.
190. **Newton-like Methods in Banach Spaces**, October 24, 1987. Combined Midwest-Southeast Differential Equations Conference, Vanderbilt University, Nashville, TN.
191. **Pointwise Quasi-Newton Methods for Integral Equations**, June 24, 1987. Workshop on Algorithmic Methods in Optimal Control and Parameter Identification, Universität Trier, Trier, Germany.
192. **The F_N method in Slab Geometries with Polynomial Basis**, March 25, 1987. Tenth International Conference on Transport Theory, La Jolla, CA.
193. **Pointwise Quasi-Newton Methods and Some Applications**, July 11, 1986. International Conference on Control of Distributed Parameter Systems, Vorau, Austria.
194. **Pointwise Quasi-Newton Methods**, March 19, 1986. Southern Methodist University, Dallas, Texas.
195. **Pointwise Quasi-Newton Methods**, March 17, 1986. Rice University, Houston, Texas.
196. **The F_N Method and the Singular Value Decomposition**, June 13, 1985. Ninth International Conference on Transport Theory, 6/13/85, Montecatini Terme, Italy.
197. **Algorithm Design on Microcomputers: Iterative Methods for Problems with Singular Jacobian**, May 21, 1985. ARO Workshop on Microcomputers in Large Scale Scientific Computation, Newark, Delaware.
198. **Applications of the F_N Method to Transport Calculations**, May 1983. Eighth International Conference on Transport Theory, Blacksburg, Virginia.
199. **Newton's Method at Singular Points**, April 18, 1981. Old Dominion University, Norfolk, VA.

200. **Approximate Methods for Exit Distribution Problems in Inhomogeneous Slabs**, May 1981. Seventh International Conference on Transport Theory, Lubbock, Texas.
201. **Newton's Method at Singular Points**, May 15, 1980. Georgia Institute of Technology, Atlanta, GA.
202. **Solution of H-equations by Iteration**, April 1979. Sixth International Conference on Transport Theory, Tuscon, Arizona.