

**CURRICULUM VITAE**

Hans D. Mittelmann

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Education:

University of Mainz	1971	M.S. (Mathematics/Physics)
University of Darmstadt	1973	Ph.D. (Mathematics)
University of Darmstadt	1976	Habilitation (Mathematics)

Research and Teaching Interests:

Numerical optimization, computer solution of partial differential equations; finite elements; large-scale scientific computation for linear and nonlinear problems.

Academic Experience:

University of Mainz	1971-1973	Scientific Staff, Computing Centre
University of Darmstadt	1974-1977	Assistant/Associate Professor
University of Dortmund	1977-1984	Associate Professor/Professor
University of Bochum	1979-1980	Visiting Professor
Stanford University	1981 (Mar-Sept)	Research Visitor
Arizona State University	1982-	Professor
University of Erlangen	1988 (Smr.-Sem.)	Visiting Professor
University of Heidelberg	1988 (Oct.)	Research Visitor
University of Jyväskylä	1991 (Smr.)	Visiting Professor
University of Leipzig	1992, 1994/5	Research Visitor/Professor
University of Fribourg	2000, 2002, 2004	Research Visitor
University of Modena	2004	Research Visitor
King Fahd University of P&M	2005	Visiting Professor

Professional Societies:

Society for Industrial and Applied Mathematics, Activity Group on Optimization, member of the GAMM activity groups "Discretization Methods in Solid Mechanics" and "Efficient Numerical Methods for Partial Differential Equations", INFORMS

Reviewer for Mathematical Reviews; Referee for various journals, the National Science Foundation and the Department of Defense; Editor of the International Series in Numerical Mathematics, Birkhäuser-Verlag, Basel and of the journals *Computational Optimization and Applications*, *Computational Management Science*, and *Indian Journal of Industrial and Applied Mathematics*

Recent Grant Support

Constrained Multisine Inputs for Plant-Friendly Identification of Chemical Processes, American Chemical Society, PRF#37610-AC9, \$120,000, Co-PI.

Next-Generation Servers for Optimization as an Internet Resource, NSF, DMI-0322580, PI: R. Fourer, NWU, Summer 2004, \$18,000

Performance Survey of Optimization Modeling Languages and Solvers, Intel Corporation, 2004-2005, \$10,000, PI

Control-Oriented Approaches to Supply Chain Management in Semiconductor Manufacturing, NSF 0400358, \$120,000, co-PI

High Order Reconstruction using Spectral Methods, NSF 0510813, \$226,000, co-PI

Selected invitations to conferences

- 1988 AMS-SIAM Summer Seminar on Computational Solution of Nonlinear Systems, Fort Collins, Colorado.  
 Recent Trends in Nonlinear Computational Mathematics and Applications, University of Pittsburgh.  
 Fundamental Problems in Mechanics, Leipzig, Germany.  
 Bifurcation Theory and its Numerical Analysis, Xi'an, PR China.  
 Mathematical Modeling and Simulation of Electric Circuits, Oberwolfach, Germany.  
 Numerical Treatment of Problems in Solid Mechanics, Bad Honnef, Germany.
- 1989 Fourth Copper Mountain Conference on Multigrid Methods, Copper Mountain, Colorado.  
 SIAM Annual Meeting, San Diego.  
 Computational Methods in Solid Mechanics, Oberwolfach, Germany.  
 Free Boundary Problems, Numerical Treatment & Optimal Control, Oberwolfach, Germany.  
 Computation of Nonlinear Flow and Instabilities, Austin, Texas.  
 Workshop on Continuation and Bifurcations: Numerical Techniques and Applications, Leuven, Belgium.  
 Miniconference on Newton-like Methods for Large-Scale Nonlinear Methods, Logan, Utah.

- 1990 Fourth International Conference on Computational and Applied Mathematics, Leuven, Belgium.  
 Contributions to the Numerics of Partial Differential Equations, Darmstadt, Germany.  
 Multigrid Methods, Oberwolfach, Germany  
 Conference on Numerical Methods for Free Boundary Problems, Jyväskylä, Finland.
- 1991 Banach Center, 37th Semester on Numerical Analysis and Mathematical Modeling, Warsaw, Poland  
 Bifurcation and Symmetry: Cross Influences between Mathematics and Applications, Marburg, Germany
- 1992 AMS SIAM Summer Seminar in Applied Mathematics on Exploiting Symmetries in Applied and Numerical Analysis, Fort Collins, Colorado  
 Short Course on Scientific Computing, Darmstadt, Germany  
 Mathematical Modeling and Simulation of Electric Circuits and Semiconductors, Oberwolfach, Germany  
 Surface Tension and Movement by Mean Curvature, Trento, Italy  
 International Symposium on Numerical Analysis, Prague, Czechoslovakia  
 First International Colloquium on Numerical Analysis, Plovdiv, Bulgaria  
 Theory and Numerical Methods for Initial-Boundary Value Problems, Oberwolfach, Germany
- 1993 Computational Methods for Nonlinear Phenomena, Oberwolfach, Germany  
 International Conference on Advances in Geometric Analysis and Continuum Mechanics, Stanford, California
- 1994 Motion by Mean Curvature and Related Topics, Trento, Italy  
 Sixth International Congress on Computational and Applied Mathematics, Leuven, Belgium  
 Parallel Algorithms for the Solution of Problems in Solid Mechanics, Bad Honnef, Germany
- 1995 Multilevel Methods and Applications, Oberwolfach, Germany  
 Numerical and Computational Methods for Free Boundary Problems, Freiburg, Germany  
 Generalized Stefan Problems: Analysis and Numerical Methods, Pavia, Italy
- 1996 Recent Advances in Applied Mathematics, Kuwait City, Kuwait
- 1997 Dutch Numerical Analysis Conference, Zeist, The Netherlands
- 1998 NODEM 98, Arizona State University  
 High-Order Finite Element Methods, Bad Honnef, Germany
- 1999 SIAM Conference on Optimization, minisymposium on Optimal Control of Elliptic and Parabolic Equations, Atlanta
- 2000 AMS-IMS-SIAM Summer Research Conference, Algorithms and their Complexity for Nonlinear Problems, Mt. Holyoke College, Mass.  
 International Symposium on Mathematical Programming, Atlanta, minisymposium on Large-Scale Nonlinear Programming

Seventh DIMACS IMplementation Challenge on Semidefinite Programming, Rutgers University

- 2001 First International Conference on Industrial and Applied Mathematics on Indian Subcontinent, Amritsar  
INFORMS Annual Meeting, Miami, FL, minisymposiums "Computational SDP and SOCP" and "Optimization Services on the Internet"
- 2002 Optimization and Applications, Oberwolfach, Germany  
SIAM Conference on Optimization, Toronto (minisymposium)  
INFORMS Annual Meeting, San Jose (2 invited minisymposia)
- 2003 International Symposium on Mathematical Programming, Copenhagen, Denmark (minisymposium)  
INFORMS Annual Meeting, Atlanta (minisymposium)  
5th ICIAM, Sydney, Australia (minisymposium)
- 2004 INFORMS Annual Meeting, Denver (2 minisymposia)  
EUCCO 2004, European Conference on Continuous Optimization, Dresden, Germany  
HPSNO'04, High Performance Algorithms and Software for Nonlinear Optimization, Island of Ischia, Italy  
3<sup>rd</sup> Annual Southwest Conference on Industrial and Interdisciplinary Mathematics, Arizona State University
- 2005 SIAM Conference on Mathematics in Industry (minisymposium organizer/speaker)  
INFORMS Annual Meeting, San Francisco (minisymposium speaker)
- 2006 INFORMS Annual Meeting, Pittsburgh (minisymposium organizer/speaker)
- 2007 Eight International Conference of ISIAM, Jammu/India  
EURO XXII Conference, Prague, Czech Republic (minisymposium organizer/speaker)  
ICCOPT-2, MOPTA-07, Hamilton, Canada (minisymposium organizer/speaker)  
INFORMS Annual Meeting, Seattle (minisymposium organizer/speaker)
- 2008 Frankfurt MathFinance Conference, Frankfurt/Germany  
Workshop Optimization Techniques for Inverse Problems , Modena/Italy  
SIAM Conference on Optimization, Boston (minisymposium organizer/speaker)

Most recent contributed conference talks

- 1998 Optimization 98, Coimbra, Portugal  
Nonlinear Optimization and Applications, Erice, Sicily, Italy
- 1999 19th IFIP TC7 Conference on System Modeling and Optimization, Cambridge, UK  
Workshops on Nonlinear Analysis and Control Theory, Porto, Portugal
- 2000 Fast Solution of Discretized Optimization Problems, Weierstrass Institute, Berlin  
Special Functions 2000, Arizona State University  
IMACS 2000, Lausanne, Switzerland

- 2002 Conference on Scientific Computation, Geneva, Switzerland  
 15th IFAC World Congress, Barcelona, Spain  
 ICCAM 2002, Leuven, Belgium  
 AICHE Annual Meeting, Indianapolis
- 2003 20th Biennial Conference on Numerical Analysis, Dundee, Scotland  
 13th IFAC Symposium on System Identification, Rotterdam, Netherlands  
 AICHE Annual Meeting, San Francisco.
- 2004 Large Scale Nonlinear Programming, Humboldt University, Berlin, Germany  
 Third International Conference on the Numerical Solution of Volterra  
 and Delay Equations, ASU
- 2006 SYSID 2006, Newcastle, Australia

Selected invitations to Seminars/Colloquia

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| 1984 | University of Heidelberg, Germany<br>Federal Institute of Technology,<br>Lausanne, Switzerland<br>University of Paderborn, Germany  | University of Cologne, Germany<br>University of Darmstadt, Germany<br>University of Augsburg, Germany<br>University of Würzburg, Germany<br>University of Heidelberg, Germany<br>University of Hamburg, Germany<br>University of Karlsruhe, Germany<br>University of Kaiserslautern, Germany |
| 1985 | University of Hannover, Germany<br>University of California, San Diego<br>University of Darmstadt, Germany  |  |
| 1986 | University of Bonn, Germany<br>Free University of Berlin, Germany<br>Fraunhofer Institute for<br>Microelectronics, Duisburg,<br>Germany<br>Southern Methodist University, Dallas  | 1989 University of Ulm, Germany<br>University of Heidelberg, Germany   |
| 1987 | University of Wyoming, Laramie<br>University of Lyon, France<br>University of Grenoble, France<br>Universität der Bundeswehr, Munich,<br>Germany<br>University of Erlangen, Germany<br>University of Darmstadt, Germany<br>University of Nijmegen, Netherlands<br>University of Freiburg, Germany | 1990 University of Darmstadt, Germany<br>University of Heidelberg, Germany<br>North Carolina State University<br>University of Aachen (RWTH),<br>Germany   |
| 1988 | University of Mainz, Germany<br>University of Konstanz, Germany<br>Technical University of Berlin,<br>Germany<br>University of Paderborn, Germany<br>University of Münster, Germany   | 1991 University of Kiel, Germany<br>University of Heidelberg, Germany<br>University of British Columbia,<br>Canada   |
|      |   | 1992 University of Stuttgart, Germany<br>University of Tübingen, Germany<br>Stanford University<br>Los Alamos National Laboratory<br>University of Leipzig, Germany<br>Technical University of Dresden,<br>Germany   |

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| <p>1993 University of Darmstadt, Germany<br/>University of Clausthal, Germany<br/>University of Leipzig, Germany<br/>University of Frankfurt, Germany</p> <p>1994 Emory University<br/>Georgia Institute of Technology<br/>University of Heidelberg, Germany<br/>University of California, San Diego<br/>University of Fribourg, Switzerland</p> <p>1995 University of Paderborn, Germany<br/>University of Bremen, Germany<br/>University of Leipzig, Germany<br/>University of Fribourg, Switzerland</p> <p>1996 University of Kuwait<br/>University of Fribourg, Switzerland</p> <p>1997 University of Münster, Germany<br/>University of Minneapolis</p> <p>1998 University of Münster, Germany<br/>University of Dresden, Germany<br/>Max Planck Institute for Mathematics<br/>in the Sciences, Leipzig, Germany</p> <p>1999 University of Iowa<br/>Purdue University<br/>University of Wisconsin, Madison<br/>Technical University of Munich,<br/>Germany</p> | <p>2000 University of Leipzig<br/>Federal Institute of Technology,<br/>Zurich, Switzerland<br/>University of Fribourg, Switzerland</p> <p>2001 University of Bangalore, India<br/>University of Madras, India<br/>ITT Delhi, India<br/>University of Arizona<br/>University of Düsseldorf, Germany</p> <p>2002 Northwestern University<br/>University of Fribourg, Switzerland</p> <p>2003 University of Erlangen, Germany<br/>University of Oxford, UK</p> <p>2004 University of Modena, Italy<br/>University of Ferrara, Italy</p> <p>2005 King Fahd University, Dhahran,<br/>Saudi Arabia, 6 talks</p> <p>2006 McMaster University, Canada<br/>Fields Institute, Toronto</p> <p>2007 University of Delhi, India<br/>University of Bologna, Italy<br/>University of Ferrara, Italy</p> |
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#### Major Webpages maintained

<http://plato.asu.edu/guide.html>

Decision Tree for Optimization Software (accessed 4000+ times daily; updated daily; generally regarded as invaluable information source; linked to from thousands of sites)

<http://plato.asu.edu/bench.html>

Benchmarks for Optimization Software (only source of its kind on the web; generally regarded as authoritative source on performance of optimization software)

#### PUBLICATIONS OF HANS D. MITTELMANN

1. Die Approximation der Lösungen gemischter Randwertprobleme quasilinearer elliptischer Differentialgleichungen, Computing 13, 253-265 (1974)

2. Finite-Element Verfahren bei quasilinearen elliptischen Randwertproblemen, in "Numerische Behandlung nichtlinearer Integrodifferential- und Differentialgleichungen", R. Ansorge, W. Törnig (eds.), Springer Lecture Notes in Mathematics, vol. 395, 199-214, 1974
3. Stabilität bei der Methode der finiten Elemente für quasilineare elliptische Randwertprobleme, in "Numerische Behandlung von Differentialgleichungen", R. Ansorge, L. Collatz, G. Hämmerlin, W. Törnig (eds.), ISNM 27, 197-226, Birkhäuser-Verlag, Basel and Stuttgart, 1975
4. Existenz und Konvergenz von Lösungen diskreter Variationsprobleme, Z. Angew. Math. Mech. 55, T255-T257 (1975).
5. Nichtlineare Dirichletprobleme und einfache finite-element Verfahren, Bonn. Math. Schr. 77, 46-61 (1975).
6. Numerische Behandlung des Minimalflächenproblems mit finiten Elementen, in "Finite Elemente und Differenzenverfahren", J. Albrecht, L. Collatz (eds.), ISNM 28, 91-108, Birkhäuser-Verlag, Basel and Stuttgart, 1975.
7. Zur gleichmässigen Konvergenz einer Finite-Elemente Lösung des Minimalflächen-problems, Z. Angew. Math. Mech. 56, T304-T306 (1976).
8. Die Methode der finiten Elemente zur numerischen Lösung von Randwertproblemen quasilinear elliptischer Differentialgleichungen. Habilitationsschrift, 99 pp., Technische Hochschule Darmstadt, 1976.
9. Über die Methode der finiten Elemente zur numerischen Lösung elliptischer Randwertprobleme 2. Ordnung (with W. Törnig), Jahrbuch Überblicke Mathematik 1977, 89-105, Bibliographisches Institut, Mannheim.
10. On pointwise estimates for a finite element solution of nonlinear boundary value problems, SIAM J. Num. Anal. 14, 773-778 (1977)
11. Numerische Behandlung nichtlinearer Randwertprobleme mit finiten Elementen, Computing 18, 67-77 (1977)
12. On the approximation of capillary surfaces in a gravitational field, Computing 18, 141-148 (1977)
13. On the approximate solution of nonlinear variational inequalities, Numer. Math. 29, 451-462 (1978)
14. Numerical methods for bifurcation problems - A survey and classification (with H. Weber), in "Bifurcation Problems and their Numerical Solution", H. D. Mittelman, H. Weber (eds.), ISNM 54, 1-45, Birkhäuser-Verlag, Basel and Stuttgart, 1980
15. On the efficient solution of nonlinear finite element equations I, Numer. Math. 35, 277-291 (1980)

16. On the efficient solution of nonlinear finite element equations II. Bound-constrained problems, *Numer. Math.* 36, 375-387 (1981)
17. Some remarks on the discrete maximum-principle for finite elements of higher order (with W. Höhn), *Computing* 27, 145-154 (1981)
18. On the efficient solution of nonlinear finite element systems, in "Nonlinear Finite Element Analysis in Structural Mechanics", W. Wunderlich, E. Stein and K. J. Bathe (eds.), 621-636, Springer-Verlag, Berlin, 1981
19. On the numerical solution of contact problems, in "Numerical Solution of Nonlinear Equations", E. L. Allgower, K. Glashoff and H. O. Peitgen (eds.), Springer Lecture Notes in Mathematics, vol. 878, 259-274, 1981
20. Multi-grid methods for simple bifurcation problems, in "Multi-grid methods", W. Hackbusch, U. Trottenberg (eds.), Springer Lecture Notes in Mathematics, vol. 960, 558-575, 1982
21. Bifurcation problems for discrete variational inequalities, *Math. Meth. in the Appl. Sci.* 4, 243-258 (1982)
22. A Bibliography on Numerical Methods for Bifurcation Problems, Preprint 56, (Angewandte Mathematik), 32 pp., Universität Dortmund, 1982.
23. A fast solver for nonlinear eigenvalue problems, in "Iterative Solution of Nonlinear Systems", A. R. Ansorge, T. Meis and W. Törnig (eds.), Springer Lecture Notes in Mathematics, vol. 953, 46-67, 1982
24. On multi-grid methods for variational inequalities (with W. Hackbusch), *Numer. Math.* 42, 65-76 (1983)
25. An efficient algorithm for bifurcation problems of variational inequalities, *Math. of Comp.* 41, 473-485 (1983)
26. Multi-grid solution of bifurcation problems (with H. Weber), *SIAM J. Sci. Stat. Comp.* 6, 49-60 (1985)
27. Continuation near symmetry-breaking bifurcation points, in "Numerical Methods for Bifurcation Problems", T. Küpper, H. D. Mittelmann and H. Weber (eds.), ISNM 70, Birkhäuser-Verlag, 319-334, 1984.
28. A free boundary problem and stability for the nonlinear beam (with E. Miersemann), *Math. Meth. in the Appl. Sci.* 8, 516-532 (1986).
29. Multi-level continuation techniques for nonlinear boundary value problems with parameter-dependence, *Appl. Math. Comp.* 19, 265-282 (1986).
30. An algorithm that exploits symmetries in bifurcation problems (with B. Thomson), *Notes on Numer. Fluid Mech.* 16, 52-68 (1987).

31. A pseudo-arclength continuation method for nonlinear eigenvalue problems, *SIAM J. Numer. Anal.* 23, 1007-1016 (1986).
32. Continuation and multi-grid for nonlinear elliptic systems (with R. Bank), in "Multigrid Methods II", W. Hackbusch, U. Trottenberg (eds.), Springer Lecture Notes in Mathematics, vol. 1228, 24-37, 1986.
33. Multi-grid continuation and spurious solutions for nonlinear boundary value problems, *Rocky Mountain Math. J.* 18, 387-401 (1988).
34. A free boundary problem and stability for the circular plate (with E. Miersemann), *Math. Meth. in the Appl. Sci.* 9, 240-250 (1987).
35. On continuation for variational inequalities, *SIAM J. Numer. Anal.* 24, 1374-1381 (1987)
36. Approximation of obstacle problems by continuation methods (with F. Conrad and R. Herbin), *SIAM J. Numer. Anal.* 25, 1409-1431 (1988).
37. Continuity of closest rank-p approximations to matrices (with J. A. Cadzow), *IEEE Trans. Acoust., Speech, Signal Processing*, Vol. ASSP-35, 1211-1212 (1987).
38. On the continuation for variational inequalities depending on an eigenvalue parameter (with E. Miersemann), *Math. Meth. in the Appl. Sci.* 11, 95-104 (1989).
39. Continuation methods for parameter-dependent boundary value problems, *AMS Lectures in Appl. Math.* 25, 159-175 (1990).
40. A multi-grid continuation strategy for parameter-dependent variational inequalities (with R. H. W. Hoppe), *J. Comput. Appl. Math.* 26, 35-46 (1989).
41. Extension of Beckert's continuation method to variational inequalities (with E. Miersemann), *Math. Nachr.* 148, 183-195 (1990).
42. Step size selection in continuation procedures and damped Newton's method (with R. E. Bank), *J. Comput. Appl. Math.* 26, 67-77 (1989).
43. A finite element method for capillary surfaces with volume constraints (with U. Hornung), *J. Comput. Phys.* 87, 126-136 (1990).
44. Continuation for parametrized nonlinear variational inequalities (with E. Miersemann), *J. Comput. Appl. Math.* 26, 23-34 (1989).
45. The augmented skeleton method for parametrized surfaces of liquid drops (with U. Hornung), *J. Colloid Interface Sci.* 133, 409-417 (1989)
46. Nonlinear parametrized equations: new results for variational problems and inequalities, *AMS Lectures in Appl. Math.* 26, 451-466 (1990).
47. A free boundary problem and stability for the rectangular plate (with E. Miersemann), *Math. Meth. in the Appl. Sci.* 12, 129-138 (1990).
48. The obstacle Bratu problem, *AMS Lectures in Appl. Math.* 26, 747-748 (1990).
49. The augmented Skeleton method for parametrized capillary surfaces, in *Proceedings of the Fifth International Symposium on Numerical Methods in Engineering*. Vol. 2, 227-234, R. Gruber, J. Periaux, and R. P. Shaw (eds.) Springer-Verlag, Berlin, 1989.

50. On the stability in obstacle problems with applications to the beam and plate (with E. Miersemann), *Z. Angew. Math. Mech.* 71, 311-321 (1991).
51. Energy stability of thermocapillary convection in a model of the float-zone, crystal-growth process (with Y. Shen, G.P. Neitzel and D. F. Jankowski), *J. Fluid Mech.* 217, 639-660 (1990).
52. Computing stability bounds for thermocapillary convection in a crystal-growth free boundary problem, in *Free Boundary Problems*, K.-H. Hoffmann, J. Sprekels (eds.), ISNM 95, 165-180, Birkhäuser-Verlag, Basel, 1990.
53. Stability of Marangoni convection in a microgravity environment, in *Continuation and Bifurcations: Numerical Techniques and Applications*, D. Roose, B. De Dier, and A. Spence (eds.), NATO ASI Series C, Vol. 313, 363-377, Kluwer, Dordrecht, 1990.
54. The nonlinear beam via optimal control with bounded state variables (with H. Maurer), *Optimal Control Applications and Methods* 12, 19-31 (1991).
55. A large sparse and indefinite generalized eigenvalue problem from fluid mechanics (with C. Law, D. F. Jankowski, G. P. Neitzel), *SIAM J. Sci. Stat. Comp.* 13, 411-424 (1992).
56. Computation of parametrized capillary surfaces, in *Contributions to the Numerics of Partial Differential Equations*, THD Schriftenreihe Wissenschaft und Technik, vol. 52, 187-202, Technical University of Darmstadt Press, Darmstadt, 1991.
57. Stability and continuation of solutions to obstacle problems (with E. Miersemann), *J. Comp. Appl. Math.* 35, 5-31 (1991).
58. Stability in obstacle problems for the von Karman plate (with E. Miersemann), *SIAM J. Math. Anal.* 23, 1099-1116 (1992).
59. Stability of thermocapillary convection in float-zone crystal growth (with C. Law, D.F. Jankowski, G.P. Neitzel), in *Numerical Methods for Free Boundary Problems*, P. Neittaanmäki (ed.), ISNM99, 58-69, Birkhäuser-Verlag, Basel, 1991.
60. Bifurcation of axially symmetric capillary surfaces (with U. Hornung), *J. Colloid Interface Sci.* 146, 219-225 (1991).
61. Stability and instability of thermocapillary convection in models of float-zone crystal growth (with G. P. Neitzel, C. C. Law, D. F. Jankowski), in *Proceedings of the AIAA/IKI Microgravity Sciences Symposium*, Moscow, USSR, pp. 57-65, 13-17 May 1991.
62. Energy stability of thermocapillary convection in a model of the float-zone crystal-growth process. Part 2. Non-axisymmetric disturbances (with G. P. Neitzel, C. C. Law, D. F. Jankowski), *Phys. Fluids A*, 3, 2841-2846 (1991).
63. Linear stability of axisymmetric thermocapillary convection in crystal growth (with K.-T. Chang, D. F. Jankowski, and G. P. Neitzel). In *Bifurcation and Symmetry*, EAllgower, K. Böhmer, and M. Golubitsky (eds.), ISNM 104, 275-284, Birkhäuser-Verlag, Basel., 1992.

64. Linear-stability theory of thermocapillary convection in a model of float-zone crystal growth (with G. P. Neitzel, K.-T. Chang, and D. F. Jankowski), Paper AIAA-92-0604, Proceedings of the AIAA 30th Aerospace Sciences Meeting, Reno, NV, January 6-9, 1992.
65. Symmetric capillary surfaces in a cube, *Math. Comp. Simulation* 35, 139-152 (1993).
66. Iterative solution of the eigenvalue problem in Hopf bifurcation for the Boussinesq equations (with G. P. Neitzel, K.-T. Chang, and D. F. Jankowski), *SIAM J. Sci. Stat. Comp.* 15, 704-712 (1994).
67. Linear-stability theory of thermocapillary convection in a model of the float-zone crystal growth process (with G. P. Neitzel, K.-T. Chang, and D. F. Jankowski), *Phys. Fluids A*. 5, 108-114 (1993).
68. Symmetric capillary surfaces in a cube, part II: Near the limit angle, *AMS Lectures in Appl. Math.* 29, 339-361 (1993)
69. Stability analysis of thermocapillary convection in semiconductor crystal growth, in *Mathematical Modeling and Simulation of Electrical Circuits and Semiconductor Devices*, R.E. Bank, R. Bulirsch, H. Gajewski, and K. Merten (eds.), ISNM 117, 237-249, Birkhäuser-Verlag, Basel, 1994.
70. Thermocapillary convection instability in microgravity crystal growth (with G. P. Neitzel, D. F. Jankowski, and K.-T. Chang), in *Proceedings of the VIIIth European Symposium on Materials and Fluid Sciences in Microgravity*, European Space Agency, ESA SP-333, 463-467, Paris, France, 1992.
71. Hydrodynamic stability of thermocapillary convection in cylindrical liquid bridges, *Math. Comp. Modelling* 20, 175-188 (1994).
72. Symmetric capillary surfaces in a cube, part III: More exotic surfaces, gravity, in *Advances in Geometric Analysis and Continuum Mechanics*, P. Concus and K. Lancaster (eds.), 199-208, International Press, Boston, 1995.
73. Parallel multisplittings for optimization (with R. A. Renaut), *J. Parallel Alg. Appl.* 7, 17-27 (1995).
74. Parallel multisplittings: overview and extensions (with R. A. Renaut and Q. He), in *Proceedings of the Fifth SIAM Conference on Applied Linear Algebra*, J. G. Lewis, editor, 34-38, SIAM Press, Philadelphia, 1994.
75. Lebesgue constant minimizing linear rational interpolation of continuous functions over the interval (with J.-P. Berrut), *Computers Math. Applic.* 33, 77-86 (1997).
76. Parallel multisplittings for constrained optimization, *Parallel Algor. Appl.* 9, 91-99 (1996).
77. Exponentially convergent linear rational interpolation between equidistant and other points (with J.-P. Berrut), *Meth. Appl. Anal.* 4, 67-76 (1997).

78. Capillary surfaces with different contact angles in a corner (with A. Zhu), *Microgravity Sci. Technol.* 9, 22-27 (1996).
79. Matrices for the direct determination of the barycentric weights of rational interpolation (with J.-P. Berrut), *J. Comp. Appl. Math.* 78, 355-370 (1997).
80. Stability of thermocapillary convection in the float-zone process for the manufacturing of semiconductors, pp. 371-388 in *Proceedings of Recent Advances in Applied Mathematics*, May 4-7, 1996, Kuwait University, Kuwait.
81. Nonlinear optimization approach to construction of general linear methods (with J. C. Butcher and Z. Jackiewicz), *J. Comp. Appl. Math.* 81, 181-196 (1997).
82. Wave propagation in striated mathematical models of cortex (with F. Hoppensteadt), *J. Math. Biol.* 35, 988-994 (1997).
83. Exploiting structure in the construction of DIMSIMs (with Z. Jackiewicz), *J. Comp. Appl. Math.* 107, 233-239 (1999)
84. Optimization Techniques for Solving Elliptic Control Problems with Control and State Constraints. Part 1: Boundary Control (with H. Maurer), *Comp. Optim. Applic.* 16, 29-55 (2000).
85. H. D. Mittelmann, Benchmarking Interior Point LP/QP Solvers, *Opt. Meth. Software* 12, 655-670 (1999).
86. Rational Interpolation Through the Optimal Attachment of Poles to the Interpolating Polynomial (with J.-P. Berrut), *Numer. Algor.* 23, 315-328 (2000).
87. Interior Point Methods for Solving Elliptic Control Problems with Control and State Constraints: Boundary and Distributed Control (with H. Maurer), *J. Comp. Appl. Math.* 120, 175-195 (2000).
88. Optimization Techniques for Solving Elliptic Control Problems with Control and State Constraints. Part II: Distributed Control (with H. Maurer), *Distributed Control, Comp. Optim. Applic.* 18, 141-160 (2001).
89. The Linear Rational Collocation Method with Iteratively Optimized Poles for Two-Point Boundary Value Problems (with J.-P. Berrut), *SIAM J. Sci. Comp.* 23, 961-975 (2001).
90. Verification of Second-Order Sufficient Optimality Conditions for Semilinear Elliptic and Parabolic Control Problems, *Comp. Optim. Applic.* 18, 141-160 (2001).
91. Sufficient Optimality for Discretized Parabolic and Elliptic Control Problems, in *Fast solution of discretized optimization problems*, K.-H. Hoffmann, R.H.W. Hoppe, and V. Schulz (eds.), ISNM 138, Birkhäuser, Basel, 2001.
92. J.-P. Berrut and H. D. Mittelmann, Linear Rational Interpolation and its Application in Approximation and Boundary Value Problems, *Rocky Mt. J. Math.* 32, 527-544 (2002).

93. H. D. Mittelmann, An Independent Benchmarking of SDP and SOCP solvers, *Math. Progr.* 95, 407-430 (2003).
94. H. D. Mittelmann and F. Tröltzsch, Sufficient Optimality in a Parabolic Control Problem, in: *Trends in Industrial Mathematics, Applied Optimization*, vol. 72, A.H. Siddiqi and M. Kocvara (eds), Kluwer, Dordrecht, The Netherlands, 2002.
95. J.-P. Berrut and H. D. Mittelmann, Point Shifts in Rational Interpolation with Optimized Denominator, in *Proceedings of Algorithms for Approximation IV*, University of Huddersfield, July 2001.
96. D. E. Rivera, M. W. Braun, and H. D. Mittelmann, Constrained Multisine Inputs for Plant-Friendly Identification of Chemical Processes, in *Proceedings of IFAC World Congress*, 21-27 July 2002, Barcelona, Spain.
97. Yu-Ju Kuo and H. D. Mittelmann, Interior Point Methods for Second Order Cone Programming and OR Applications, *Comp. Optim. Applic.* 28, 255-285 (2004).
98. J.-P. Berrut and H. D. Mittelmann, Adaptive point shifts in rational approximation with optimized denominator, *J. Comp. Appl. Math.* 164, 81-92 (2004).
99. H. D. Mittelmann and A. Pruessner, A Server for Automated Performance Analysis and Benchmarking of Optimization Software, to appear in *Optim. Meth. Software*
100. H. Lee, D. E. Rivera, and H. D. Mittelmann, Constrained Minimum Crest Factor Multisine Signals for "Plant-Friendly" Identification of Highly Interactive Systems, in *Proceedings of 13th IFAC Symposium on System Identification*, 27-29 August 2003, Rotterdam, The Netherlands.
101. D. E. Rivera, H. Lee, M. W. Braun, and H. D. Mittelmann, "Plant-Friendly" System Identification: A Challenge for the Process Industries, in *Proceedings of 13th IFAC Symposium on System Identification*, 27-29 August 2003, Rotterdam, The Netherlands.
102. D. E. Rivera, H. Lee, H. D. Mittelmann, and M. W. Braun, Constrained Multisine Input Signals for Plant-Friendly Identification of Chemical Process Systems. submitted
103. H. Lee, D. E. Rivera, and H. D. Mittelmann, A Novel Approach to Plant-Friendly Multivariable Identification of Highly Interactive Systems, *Proceedings of 2003 Annual AIChE Meeting*, San Francisco, CA, November 16-21, 2003
104. J.-P. Berrut and H. D. Mittelmann, Optimized point shifts and poles in the linear rational pseudospectral method for boundary value problems, *J. Comp. Phys.* 204, 292-301 (2005).
105. J.-P. Berrut, R. Baltensperger, and H. D. Mittelmann, Recent developments in barycentric rational interpolation, in *Trends and Applications in Constructive Approximation*, D. H. Mache, J. Szabados, and M. G. de Bruin (eds.), ISNM 151, Birkhaeuser, Basel, 2005.
106. H.D. Mittelmann, G. Pendse, D.E. Rivera, and H. Lee, Optimization-based Design of

- Plant-Friendly Multisine Signals using Geometric Discrepancy Criteria, *Comp. Optim. Applic.* 38, 173-190 (2007)
107. H. D. Mittelmann and G. Pendse, Optimal Input Signal Design in Data-Centric System Identification, in *Modern Mathematical Models, Methods and Algorithms for Real-World Systems*, A. H. Siddiqi, I. Duff, and O. Christensen (eds.) Anamaya Publishers, New Delhi London, 2006, pp. 14-59
  108. D. E. Rivera, H. Lee, H. D. Mittelmann, and G. Pendse, Optimization-based Design of Plant-Friendly Multisine Signals using Geometric Discrepancy Criteria, 4th IFAC Symposium on System Identification, Newcastle, Australia, March 29-31, 2006
  109. H.S. Sarjoughian, D. Huang, G.W. Godding, K.G. Kempf, W. Wang, D.E. Rivera, and H.D. Mittelmann, Hybrid Discrete Event Simulation with Model Predictive Control for Semiconductor Supply-Chain Manufacturing, *Proceedings of the Second INFORMS Winter Simulation Conference*, 2005
  110. D. E. Rivera, H. Lee, H. D. Mittelmann, and G. Pendse, Optimization-based Design of Plant-Friendly Input Signals for Data-Centric Estimation and Control, Annual AIChE Meeting, paper 242k, Cincinnati, OH, October 31 - November 4, 2005
  111. H.D. Mittelmann, J. Peng, and X. Wu, An Integer Linear Programming Approach to the Quadratic Assignment Problem Associated with the Hypercube.  
[http://www.optimization-online.org/DB\\_HTML/2007/06/1674.html](http://www.optimization-online.org/DB_HTML/2007/06/1674.html)
  112. H. Lee, D. E. Rivera, H. D. Mittelmann, and G. Pendse, Optimization-based Design of Plant-Friendly Input Signals for Model-On-Demand Estimation and Model Predictive Control, to appear in *Proceedings of 2007 American Control Conference*
  113. D. E. Rivera, H. Lee, H. D. Mittelmann, and M. W. Braun. High-Purity Distillation - Using plant-friendly multisine signals to identify a strongly interactive process. *IEEE Control Systems Magazine* 27 no.5, 72-89 (2007)
  114. H. D. Mittelmann, DTOS - A Service for the Optimization Community, *SIAG/OPT Views-and-News*, 18, 17-20 (2007)
  115. H. D. Mittelmann, State-of-the-Art in the Solution of Control-Related Nonlinear Optimization Problems, *Indian J. Industr. Appl. Math.* 1, 24-41 (2007)
  116. W. Wang, D. E. Rivera, and H. D. Mittelmann, Inner and Outer Loop Optimization in Semiconductor Manufacturing Supply Chain Management, submitted
  117. R. Saxena, A. Gelb, and H. D. Mittelmann. A High Order Method for Determining Edges in the Gradient of a Function, to appear in *Comm. Comp. Phys.*
  118. D. Huang, H. Sarjoughian, W. Wang, G. Godding, D. Rivera, K. Kempf, and H. Mittelmann, Simulation of Semiconductor Supply-Chain Systems with DEVS, KIB, and MPC, submitted

119. H. D. Mittelmann, Y. Peng, Estimating Bounds for Quadratic Assignment Problems Associated with the Hamming and Manhattan Distance Matrices based on Semidefinite Programming, submitted
120. D. Huang, H. Sarjoughian, W. Wang, G. Godding, D. Rivera, K. Kempf, H. Mittelmann, Simulation of Semiconductor Manufacturing Supply-Chain Systems with DEVS, MPC, and KIB, submitted

#### BOOKS/EDITORSHIPS

1. Bifurcation Problems and their Numerical Solution (editor; H. Weber coeditor), ISNM 54, Birkhäuser - Verlag, Basel and Boston, 1980.
2. Numerical Methods for Bifurcation Problems, (editor; T. Küpper and H. Weber coeditors), ISNM 70, Birkhäuser - Verlag, Basel and Boston, 1984.
3. Continuation Techniques and Bifurcation Problems (editor; D. Roose coeditor), special volume 26 (1989) of Journal of Computational and Applied Mathematics, reprinted as ISNM 92 , Birkhäuser-Verlag, Basel and Boston, 1990.