

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
Technical University Darmstadt	2009	Visiting Professor
Tokyo Inst. of Technology	2009	Research Visitor
Chinese University of Hong Kong	2015	Research Visitor
National Taiwan Normal University	2015	Research Visitor
Monash University, Australia	2015, 2016	Research Visitor
University of Freiburg	2016	Visiting Professor

Professional Societies:

Society for Industrial and Applied Mathematics, Activity Group on Optimization, member of the GAMM activity group "Efficient Numerical Methods for Partial Differential Equations", INFORMS, Mathematical Optimization Society

Reviewer for Mathematical Reviews; Referee for various journals, the National Science Foundation and the Department of Defense; Associate Editor of the journals *Computational Optimization and Applications*, *Computational Management Science*, and *Indian Journal of Industrial and Applied Mathematics*

Recent Grant Support

Supporting the ARPA-E Power Grid Competition, PNNL/DOE, 10/1/15-3/31/16, \$30,000, PI

Exact Solution of Problems in UAV Guidance and Communications: Probabilistic and Discrete Mathematical Models, AFOSR, 9/30/15-9/30/18, \$370,000, PI

Nonlinear Multidimensional Assignment Problems. Efficient Conic Optimization Methods and Applications, AFOSR, 4/12-3/15, \$360,000, PI

Scalable Effective Approaches for Quadratic Assignment Problems Based on Conic Optimization and Applications, AFOSR FA 9550-09-1-0098, \$176,000, co-PI

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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
 3rd 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)
- 2009 International Conference on Modeling of Engineering and
 Technological Problems (ICMETP), Agra/India
 20th International Symposium for Mathematical Programming, Chicago
 (minisymposia organizer/speaker)
 Combinatorial Optimization at Work, Zuse Institute, Berlin, Germany
- 2010 European Conference on Operations Research XXIV, Lisbon, Portugal
 What a pivot - Workshop honouring the 65th birthday of Bob Bixby, Erlangen, Germany
 INFORMS Annual meeting, Austin, Texas
- 2011 SIAM Workshop on Combinatorial Scientific Computing, Darmstadt, Germany
 ICIAM, Vancouver, BC
 INFORMS Annual Meeting, Charlotte, NC
- 2012 The First Workshop on Computational Aspects of Solving Large-scale Optimization Problems, Chuo
 University, Tokyo, Japan
 INFORMS International Conference, Beijing, China
 International Symposium on Mathematical Programming, Berlin, Germany
 INFORMS Annual Meeting, Phoenix, AZ
- 2013 European Conference on Operations Research XXVI, Rome, Italy
 INFORMS Annual Meeting, Minneapolis, MN
 Optimization and Discrete Math Annual Program Review, AFOSR, Arlington, VA
- 2014 INFORMS Annual Meeting, San Francisco, CA
 Conference on Partial Differential Equations, Novacella, Italy
 Advanced Bulk Power System Optimization Technologies, ARPA-E, Arlington, VA
- 2015 High Performance Scientific Computation 2015, Hanoi, Vietnam
 International Symposium in Mathematical Programming, Pittsburgh
 INFORMS Annual Meeting, Philadelphia
- 2016 INFORMS Annual Meeting, Nashville, TN

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

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

- 1992 University of Stuttgart, Germany
University of Tübingen, Germany
Stanford University
Los Alamos National Laboratory
University of Leipzig, Germany
Technical University of Dresden, Germany
- 1993 University of Darmstadt, Germany
University of Clausthal, Germany
University of Leipzig, Germany
University of Frankfurt, Germany
- 1994 Emory University
Georgia Institute of Technology
University of Heidelberg, Germany
University of California, San Diego
University of Fribourg, Switzerland
- 1995 University of Paderborn, Germany
University of Bremen, Germany
University of Leipzig, Germany
University of Fribourg, Switzerland
- 1996 University of Kuwait
University of Fribourg, Switzerland
- 1997 University of Münster, Germany
University of Minneapolis
- 1998 University of Münster, Germany
University of Dresden, Germany
Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany
- 1999 University of Iowa
Purdue University
University of Wisconsin, Madison
Technical University of Munich, Germany
- 2000 University of Leipzig
Federal Institute of Technology, Zurich, Switzerland
University of Fribourg, Switzerland
- 2001 University of Bangalore, India
University of Madras, India
ITT Delhi, India
University of Arizona
University of Düsseldorf, Germany
- 2002 Northwestern University
University of Fribourg, Switzerland
- 2003 University of Erlangen, Germany
University of Oxford, UK
- 2004 University of Modena, Italy
University of Ferrara, Italy
- 2005 King Fahd University, Dhahran, Saudi Arabia, 6 talks

- 2006 McMaster University, Canada
Fields Institute, Toronto
- 2007 University of Delhi, India
University of Bologna, Italy
University of Ferrara, Italy
- 2008 Technical University, Berlin
Konrad Zuse Institute, Berlin
Humboldt University, Berlin
- 2009 National University, Singapore
Indian Institute of Science, Bangalore (2 talks)
University of Hyderabad, India
Technical University Darmstadt (4 talks)
Konrad Zuse Institute, Berlin
CWI Amsterdam, The Netherlands
EWha Womens University, Seoul, Korea
Kyungpook National University, Daegu, Korea
Chuo University, Tokyo, Japan
Tokyo Institute of Technology, Tokyo, Japan
Kyoto University, Kyoto, Japan
- 2010 University of Heidelberg, Germany
University of Frankfurt, Germany
- 2011 University of Konstanz/Germany
Middle East Technical University, Ankara, Turkey
Bogazici University, Istanbul, Turkey
Bahcesehir University, Istanbul, Turkey
- 2012 Lanzhou University, Lanzhou, China
Fudan University, Shanghai, China
- 2013 Konrad Zuse Institute, Berlin, Germany
- 2014 University of Newcastle, Australia
University of New South Wales, Australia
University of Sydney, Australia
Federation University, Ballarat, Australia
University of Melbourne, Australia
Curtin University, Perth, Australia
Flinders University, Adelaide, Australia
Aalto University, Helsinki, Finland
Abo Akademi University, Turku, Finland
University of Heidelberg, Germany
Technical University Munich, Germany
University of Erlangen-Nuremberg, Germany
Konrad Zuse Institute, Berlin, Germany
- 2015 Chinese University of Hong Kong
Hong Kong University of Science and Technology
National Taiwan Normal University, Taipei
National Taiwan University, Taipei
University of Dortmund, Germany
University of Bremen, Germany
RWTH Aachen University, Germany
Universite Libre, Brussels, Belgium
University of Freiburg, Germany

2016 University of Freiburg, Germany

Major Webpages maintained

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

Decision Tree for Optimization Software (accessed 5000+ 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 quasilinearer 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. Stepsize 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," E. Allgower, 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).
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