



KLAUS-JÜRGEN BATHE, in 2021

Klaus-Jürgen Bathe is Professor of Mechanical Engineering at the Massachusetts Institute of Technology, Cambridge, MA 02139. Telephone # at M.I.T. 617 253-6645

Some personal data

born 1943 in Berlin, Germany,
citizen of Germany, U.S. immigrant

Education

German Abitur (High School Diploma), Oldenburg i.O., Federal Republic of Germany.
B.Sc., Civil Engineering, University of Cape Town, S.A., 1967.
M.Sc., Civil Engineering, University of Calgary, Canada, 1969.
Ph.D., Civil Engineering, University of California, Berkeley, U.S.A., 1971.

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Academic appointment

Assistant Research Engineer, University of California, Berkeley, 1972 - 1975.

Assistant, Associate, full Professor of Mechanical Engineering, M.I.T., 1975 -

Associate Head & Head, Division of Mechanics and Materials, Mechanical Engineering Department, M.I.T., 1985 -1991.

Research

K.J. Bathe's research focuses on the development of finite element methods and Machine Learning, for the analysis of structures and solids, heat transfer, fluids and multiphysics problems.

K.J. Bathe has been the principal developer of the SAP IV and NONSAP finite element computer programs (published in 1974), started the development of ADINA and was pursuing and leading from 1974 to 2022 the development of the ADINA System for finite element displacement/stress, heat transfer, fluid flow and fluid-structure interaction analyses.

K.J. Bathe has been listed (in 2025) as one of the top three contributors, worldwide during their lives, to the development of the finite element method, see Wikipedia, KJ Bathe Honors & Awards

Web page at M.I.T.

<http://meche.mit.edu/people/faculty/kjb@mit.edu>

On Google Wikipedia; on Google Scholar

KJ Bathe

Founder of ADINA R & D, Inc.

The company developing the ADINA System for general finite element analyses

www.adina.com

The company was sold to Bentley Systems, Inc. in April 2022.

Founder of the Leadership Program at the University of Cape Town, South Africa

<http://www.kjbatheleadership.uct.ac.za/>

Mission statement —

The primary goal is to produce graduates with outstanding leadership qualities and a strong sense of social justice, who will go on to play leading and significant roles in business, government, industry and civil society in South Africa and on the African continent

Awards

- 1967 Gold medalist, Best Final Year Civil Engineering Student, University of Cape Town, South Africa
- 1981 American Society of Civil Engineers, Walter L. Huber Research Prize for “Contributions in Nonlinear Computational Mechanics”
- 1981 Doctor of Science, D.Sc., University of Cape Town, South Africa
- 1985 Gustus L. Larson American Society of Mechanical Engineers and Pi Tau Sigma award for outstanding achievements in Mechanical Engineering
- 1986 Graduate Student Council Teaching Award, M.I.T.
- 1995 U.S. National Academy of Engineering award for outstanding contributions to engineering education and research
- 1999 M.I.T. School of Engineering Award for Distinguished Teaching
- 2003 Dr.-Ing. E.h. (h.c.), Technical University of Darmstadt, Germany
- 2003 Dr. h.c., Slovak Academy of Sciences, and Technical University of Zilina, Slovakia
- 2003 Dr. h.c., Technical University of Rzeszow, Poland
- 2003 Elected foreign member of Argentine National Academy of Physics, Natural and Exact Sciences
- 2005 Dr. h.c., Technical University of Madrid (Universidad Politecnica de Madrid), Spain
- 2005 Den Hartog Distinguished Educator Award, M.I.T.

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2006 Dr. h.c., University of Bucharest, Romania

2010 Dr. h.c., University of Miskolc, Hungary

2010 Dr. h.c., University of Buenos Aires, Argentina

2013 D.Sc. h.c., University of Cape Town, South Africa

2015 Dr. h.c., Sorbonne Universités - Université de Technologie de Compiègne, France

2025 Listed by ScholarGPS as one of the top three contributors, worldwide during their lives, to the development of the finite element method

2026 Creation of the KJ Bathe Award by the University of Cambridge, UK to bestow the highest honor for contributions in Computational Science and Engineering,

Memberships in Major Societies

ASCE, ASME

Series Editor -- Book Series

Editor of Book Series “Computational Methods in Engineering & the Sciences”, Springer Verlag

Editor-in-Chief

Machine Learning for Computational Science and Engineering, Springer-Nature

Journal Activities

International Journal for
Computer Methods in Applied
Mechanics and Engineering

On editorial advisory board

International Journal for

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Numerical Methods in Engineering	On editorial advisory board
Finite Elements in Analysis and Design	On editorial advisory board
Engineering with Computers	On editorial advisory board
Mechanics Research Communications	On editorial advisory board
Advances in Engineering Software	On editorial advisory board
Computational Mechanics	On editorial advisory board
Vietnam Journal of Mechanics	Honorary Editor
Intern. Journal of Computational Methods	Honorary Editor
Engineering Computations	Honorary Editor
Computers & Structures	Honorary Editor

Other Professional Activities

From 1970s to 1990s, consultant to many companies in the U.S., Japan and Europe

Plenary lecturer at many conferences, lecturer at numerous seminars

In Sept. 1986, Founder of ADINA R & D, Inc.

34 video-lectures entitled “Finite Element Procedures for Solids and Structures” with Study Guides, Massachusetts Institute of Technology, 1980s.

<https://www.youtube.com/watch?v=oNqSzzycRhw>

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Organized the twelve bi-yearly conferences “Nonlinear Finite Element Analysis and ADINA”, all held at M.I.T., 1977 to 1999.

Organized the M.I.T. Conference Series on Computational Fluid and Solid Mechanics, held bi-yearly at M.I.T; 2001 - 2013

Member of the Science Council of Germany (Wissenschaftsrat) for the Excellence Initiative in Germany; 2006 - 2013

Books

K. J. Bathe and E. L. Wilson, *Numerical Methods in Finite Element Analysis*, Prentice-Hall, 1976, Translated into Japanese (1980) , Russian (1982).

K. J. Bathe, *Finite Element Procedures in Engineering Analysis*, Prentice-Hall, 1982.

K. J. Bathe, *Finite Element Procedures*, Prentice Hall, 1996, also published by Springer (in German) 2002; 2nd edition KJ Bathe, Watertown, MA, 2014, Amazon.com; and (in Chinese) Higher Education Press China 2016.

M. Kojic and K. J. Bathe, *Inelastic Analysis of Solids and Structures*, Springer, 2005.

D. Chapelle and K. J. Bathe, *The Finite Element Analysis of Shells – Fundamentals*, Springer, 2003, 2nd edition 2011.

M. L. Buclea and K. J. Bathe, *The Mechanics of Solids and Structures -- Hierarchical Modeling and the Finite Element Solution*, Springer, 2011.

K. J. Bathe, *To Enrich Life*, 2nd edition 2019. Amazon.com.

K.J. Bathe, *How Lawyers Think, Work & When Perhaps not Hire a Lawyer*”, 2021. Amazon.com.

Books – editor

K. J. Bathe, J. T. Oden, and W. Wunderlich (eds.), *Formulations and Computational Algorithms in Finite Element Analysis*, M.I.T. Press, 1977.

W. Wunderlich, E. Stein and K. J. Bathe (eds.), *Nonlinear Finite Element Methods in Structural Mechanics*, Springer-Verlag, 1981.

P. Bergan, K. J. Bathe and W. Wunderlich (eds.), *Finite Element Methods for Nonlinear Problems*, Springer-Verlag, 1986.

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K. J. Bathe and D. R. J. Owen (eds.), *Reliability of Methods for Engineering Analysis*, Pineridge Press, 1986.

K. J. Bathe (ed.), *Nonlinear Finite Element Analysis and ADINA*, Proceedings of 3rd to 12th Conferences, Pergamon Press, J. Computers & Structures, Vol. 13, No. 5-6, 1981; Vol. 17, No. 5-6, 1983; Vol. 21, No. 1-2, 1985; Vol. 26, No. 1-2, 1987; Vol. 32, No. 3-4, 1989; Vol. 40, No. 2, 1991; Vol. 47, No. 4-5, 1993; Vol. 56, No. 2-3, 1995; Vol. 64, No. 5-6, 1997, and Vol. 72, 1999.

K. J. Bathe, (ed.), *Computational Fluid and Solid Mechanics*, Elsevier, 2001.

K. J. Bathe, (ed.), *Computational Fluid and Solid Mechanics 2003*, Elsevier, 2003.

K. J. Bathe, (ed.), *Computational Fluid and Solid Mechanics 2005*, Elsevier, 2005.

K. J. Bathe, (ed.), *Computational Fluid and Solid Mechanics 2007*, Elsevier, 2007 (also Special Issue of Computers & Structures, June 2007)

K. J. Bathe, (ed.), *Computational Fluid and Solid Mechanics 2009*, Elsevier, 2009 (also Special Issue of Computers & Structures, June 2009)

K. J. Bathe, (ed.), *Computational Fluid and Solid Mechanics 2011*, Elsevier, 2011 (also Special Issue of Computers & Structures, June 2011)

K. J. Bathe, (ed.), *Computational Fluid and Solid Mechanics 2013*, Elsevier, 2013 (also Special Issue of Computers & Structures, June 2013)

T. Rabczuk and KJ Bathe (eds), *Machine Learning in Modeling and Simulation*, Springer 2023

ISI Highly Cited Researcher

Original member; ISI highly cited researchers database

On Google Scholar

Over 80,000 citations

Additional Publications of K. J. Bathe

K. J. Bathe, "The Use of the Electronic Computer in Structural Analysis", *IMPACT, Journal of UCT Engineering Society*, 57-61, 1967.

A. Ghali, J. M. Strong, and K. J. Bathe, "Field Measurement of End Support Reactions of Continuous Multi-Girder Skew Bridge", *Proceedings of the Second International Symposium on Concrete Bridge Design*, 260-271, April 1969.

K. J. Bathe, "Numerical Analysis of Skew Bridges", Department of Civil Engineering, The University of Calgary, Calgary, Alberta, Canada, April 1969 (M.Sc. thesis).

A. Ghali and K. J. Bathe, "Analysis of Plates Subjected to In-Plane Forces Using Large Finite Elements", *International Association for Bridge and Structural Engineering*, 30-I, 69-72, 1970.

A. Ghali and K. J. Bathe, "Analysis of Plates in Bending Using Large Finite Elements", *International Association for Bridge and Structural Engineering*, 30-II, 29-40, 1970.

K. J. Bathe, "Solution Methods for Large Generalized Eigenvalue Problems in Structural Engineering", Report UCSESM 71-20, Department of Civil Engineering, University of California, Berkeley, November 1971 (Ph.D. thesis).

R. W. Clough and K. J. Bathe, "Finite Element Analysis of Dynamic Response", in Advances in Computational Methods in Structural Mechanics and Design, University of Alabama Press, Huntsville, Alabama, 1972.

F. E. Peterson and K. J. Bathe, "Nonlinear Dynamic Analysis of Reactor Core Components", Engineering Analysis Corp., Report No. S-104.4, Berkeley, California, 1972.

K. J. Bathe and E. L. Wilson, "Linear and Nonlinear Earthquake Analysis of Complex Structures", *Proceedings of the Fifth World Conference on Earthquake Engineering*, June 1973.

K. J. Bathe and E. L. Wilson, "Eigensolution of Large Structural Systems with Small Bandwidth", *ASCE, J. Eng. Mech. Div.*, 99, 467-479, June 1973.

K. J. Bathe and E. L. Wilson, "NONSAP - A General Finite Element Program for Nonlinear Dynamic Analysis of Complex Structures", Paper No. M3-1, *Proceedings of the Second Conference on Structural Mechanics in Reactor Technology*, September 1973.

K. J. Bathe, E. L. Wilson, and F. E. Peterson, "SAP IV - A Structural Analysis Program for Static and Dynamic Response of Linear Systems", *Earthquake Engineering Research Center Report No. 73-11*, College of Engineering, University of California, Berkeley, June 1973, revised April 1974; also available in German, *Institut für Konstruktiven Ingenieurbau, Ruhr-Universität Bochum, Mitteilung Nr. 73-3*, September 1973.

E. L. Wilson, I. Farhoomand, and K. J. Bathe, “Nonlinear Dynamic Analysis of Complex Structures”, *International Journal of Earthquake Engineering and Structural Dynamics*, 1, 241-252, 1973.

K. J. Bathe and E.L. Wilson, “Stability and Accuracy Analysis of Direct Integration Methods”, *International Journal of Earthquake Engineering and Structural Dynamics*, 1, 283-291, 1973.

E. L. Wilson, K. J. Bathe, F. E. Peterson, H. Dovey, “SAP - A Structural Analysis Program for Linear Systems”, *J. Nuclear Engineering and Design*, 25, 257-274, 1973.

K. J. Bathe and E. L. Wilson, “Solution Methods for Eigenvalue Problems in Structural Mechanics”, *International Journal for Numerical Methods in Engineering*, 6, 213-226, 1973.

K. J. Bathe, E. Ramm, and E. L. Wilson, “Finite Element Formulations for Large Displacement and Large Strain Analysis”, Report UCSESM 73-14, Department of Civil Engineering, University of California, Berkeley, February 1974.

K. J. Bathe, E. L. Wilson, and R. Iding, “NONSAP - A Structural Analysis Program for Static and Dynamic Response of Nonlinear Systems”, Report UCSESM 74-3, Department of Civil Engineering, University of California, Berkeley, February 1974.

K. J. Bathe, H. Ozdemir, and E. L. Wilson, “Static and Dynamic Geometric and Material Nonlinear Analysis”, Report UCSESM 74-4, Department of Civil Engineering, University of California, Berkeley, February 1974.

K. J. Bathe and E. L. Wilson, Thick shells, in *Structural Mechanics Computer Programs*, W. Pilkey, K. Saczalski, H. Schaeffer, eds., The University Press of Virginia, 1974.

K. J. Bathe and E. L. Wilson, “Large Eigenvalue Problems in Dynamic Analysis”, *ASCE, J. Eng. Mech. Div.*, 98, 1471-1485, December 1972, and closure of paper in *ASCE, Eng. Mech. Div.*, 100, 1044-1046, 1974.

K. J. Bathe and E. L. Wilson, “NONSAP - A Nonlinear Structural Analysis Program”, *J. Nuclear Engineering and Design*, 29, 266-293, 1974.

E. L. Wilson, K. J. Bathe, and F. E. Peterson, “Finite Element Analysis of Linear and Nonlinear Heat Transfer”, *J. Nuclear Engineering and Design*, 29, 110-124, 1974.

E. L. Wilson, K. J. Bathe, and W. P. Doherty, “Direct Solution of Large Systems of Linear Equations”, *J. Computers & Structures*, 4, 363-372, 1974.

K. J. Bathe, E. Ramm, and E. L. Wilson, “Finite Element Formulations for Large Deformation Dynamic Analysis”, *International Journal for Numerical Methods in Engineering*, 9, 353-386, 1975.

K. J. Bathe, “ADINA - A Finite Element Program for Automatic Dynamic Incremental

Nonlinear Analysis”, Report 82448-1, Acoustics and Vibration Laboratory, M.I.T., September 1975, rev. May 1977, rev. December 1978.

K. J. Bathe, “Finite Element Analysis of Geometric and Material Nonlinear Dynamic Response”, Proceedings of the Third International Conference on Structural Mechanics in Reactor Technology, September 1975.

V. G. Dunder and K. J. Bathe, “Some Comments on the Choice and Application of Computer Programs in Pipe Whip Analysis”, ASCE, Proceedings of the Second International Conference on Structural Design of Nuclear Plant Facilities, December 1975.

K. J. Bathe, “On the Accuracy of the Solution of Finite Element Equilibrium Equations”, ASCE, Proceedings of the Second International Conference on Numerical Methods in Geomechanics, June 1976.

K. J. Bathe and H. Ozdemir, “Elastic-Plastic Large Deformation Static and Dynamic Analysis”, J. Computers & Structures, 6, 81-92, 1976.

S. M. Ma and K. J. Bathe, “On Finite Element Analysis of Pipe Whip Problems”, J. Nuclear Engineering and Design, 37, 413-430, 1976.

K. J. Bathe, “An Assessment of Current Finite Element Analysis of Nonlinear Problems in Solid Mechanics”, Chapter in Numerical Solution of Partial Differential Equations, III, (B. Hubbard, ed.), Academic Press, 1976.

K. J. Bathe, “Computational Methods in Structural Dynamics”, in Computing in Applied Mechanics, AMD, ASME, Winter Annual Meeting, New York, 1976.

K. J. Bathe, “Static and Dynamic Geometric and Material Nonlinear Analysis Using ADINA”, Report 82448-2, Acoustics and Vibration Laboratory, M.I.T., May 1976, revised May 1977.

K. J. Bathe, “Convergence of Subspace Iteration”, in Formulations and Computational Algorithms in Finite Element Analysis, (K.J. Bathe, J.T. Oden and W. Wunderlich, eds.), M.I.T. Press, 1977.

K. J. Bathe, “ADINAT - Finite Element Program for Automatic Dynamic Incremental Nonlinear Analysis of Temperatures”, Acoustics and Vibration Laboratory, Report 82448-5, Department of Mechanical Engineering, M.I.T., May 1977, rev. December 1978.

M. D. Snyder and K. J. Bathe, “Formulations and Numerical Solution of Thermo-Elastic-Plastic and Creep Problems”, Acoustics and Vibration Laboratory, Report No. 82448-3, Department of Mechanical Engineering, M.I.T., 1977.

S. Bolourchi and K. J. Bathe, “A Geometric and Material Nonlinear Three-Dimensional Beam Element”, Acoustics and Vibration Laboratory, Report 82448-4, Department of Mechanical

Engineering, M.I.T., August 1977.

K. J. Bathe (ed.), “Applications Using ADINA”, Acoustics and Vibration Laboratory, Report 82448-6, Department of Mechanical Eng., M.I.T., August 1977.

K. J. Bathe, “Nonlinear Analysis of Heat Transfer and Field Problems”, Proceedings of the 14th Annual Meeting of the Society of Engineering Science, November 1977.

K. J. Bathe and S. Ramaswamy, “Subspace Iteration with Shifting for Solution of Large Eigensystems”, Acoustics and Vibration Laboratory, Report 82448-7, Department of Mechanical Engineering, M.I.T., December 1977.

K. J. Bathe, S. Bolourchi, S. Ramaswamy, and M. D. Snyder, “Some Computational Capabilities for Nonlinear Finite Element Analysis”, J. Nuclear Engineering and Design, 46, 429-455, 1978.

K. J. Bathe and W. Hahn, “On Transient Analysis of Fluid-Structure Systems”, J. Computers & Structures, 10, 383-391, 1978.

J. T. Oden and K. J. Bathe, “A Commentary on Computational Mechanics”, Applied Mech. Reviews, September 1978.

K. J. Bathe, “On the Development of Solution Methods for Nonlinear Analysis in Mechanics”, Proceedings of the Conference on Computer Aids in Manufacturing, Sperry Univac, October 1978.

J. L. Batoz, K. J. Bathe, and L. W. Ho, “A Search for the Optimal Three-Noded Triangular Plate Bending Element”, Acoustics and Vibration Laboratory, Report 82448-8, Department of Mechanical Engineering, M.I.T., November 1978.

K. J. Bathe and A. P. Cimento, “On the Time Integration of Nonlinear Dynamic Response”, Proceedings of the Conference of the Groupe Pour L'Avancement Des Methodes Numeriques de l'Ingenieur, Paris, November 1978.

K. J. Bathe (ed.), “Nonlinear Finite Element Analysis and ADINA”, Acoustics and Vibration Laboratory, Report 82448-9, Department of Mechanical Eng., M.I.T., August 1979.

K.J. Bathe and M. Khoshgoftaar, “Finite Element Free Surface Seepage Analysis Without Mesh Iteration”, J. of Num. and Anal. Methods in Geomechanics, 3, 13-22, 1979.

M. P. Cleary and K. J. Bathe, “On Tractable Constitutive Relations and Numerical Procedures for Structural Analysis in Masses of Geological Materials”, Proceedings of the Third International Conference on Numerical Methods in Geomechanics, Aachen, Germany, April, 1979.

K. J. Bathe, “A Brief View on the Current Status of Finite Element Techniques”, Proceedings of the Topical Meeting on Computational Methods in Nuclear Engineering, Williamsburg, Virginia,

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April 1979.

K. J. Bathe, M. D. Snyder, and A. P. Cimento, “On Finite Element Analysis of Elastic-Plastic Response”, Proceedings of the Conference on Engineering Applications of the Finite Element Method, Det Norske Veritas, Oslo, Norway, May 1979.

K. J. Bathe, “Finite Element Formulation, Modeling and Solution of Nonlinear Dynamic Problems”, Chapter in Numerical Methods for Partial Differential Equations, (S. W. Parter, ed.), Academic Press, 1979.

K. J. Bathe, “On the Finite Element Formulation and Solution of Nonlinear Heat Transfer Problems”, Proceedings of the National Conference on Numerical Methods in Heat Transfer, University of Maryland, September 1979.

K. J. Bathe and S. Bolourchi, “Large Displacement Analysis of Three-Dimensional Beam Structures”, International Journal for Numerical Methods in Engineering, 14, 961-986, 1979.

K. J. Bathe and M. Khoshgoftaar, “Finite Element Formulation and Solution of Nonlinear Heat Transfer”, J. Nuclear Engineering and Design, 51, 389-401, 1979.

R. O. Ritchie and K. J. Bathe, “On the Calibration of the Electrical Potential Technique for Monitoring Crack Growth Using Finite Element Methods”, J. of Fracture, 15, 47-55, 1979.

S. Key, R. Krieg, and K. J. Bathe, “On Finite Element Analysis of Metal Forming Processes”, J. Comp. Meth. In Applied Mech. and Eng., 17/18, 597-608, 1979.

K. J. Bathe and S. Ramaswamy, “On Three-Dimensional Nonlinear Analysis of Concrete Structures”, J. Nuclear Engineering and Design, 52, 385-409, 1979.

K. J. Bathe and M. Khoshgoftaar, “On Finite Element Analysis of Nonlinear Heat Transfer with Phase Changes”, Proceedings of the 3rd Int. Conference on Finite Elements in Water Resources, The University of Mississippi, Oxford Campus, May 1980.

K. J. Bathe and S. Bolourchi, “A Geometric and Material Nonlinear Plate and Shell Element”, J. Computers & Structures, 11, 23-48, 1980.

K. J. Bathe and C. Almeida, “A Simple and Effective Pipe Elbow Element—Linear Analysis”, ASME, J. Applied Mech., 47, 93-100, 1980.

K. J. Bathe and A. P. Cimento, “Some Practical Procedures for the Solution of Nonlinear Finite Element Equations”, J. Computer Meth. In Applied Mech. and Eng., 22, 59-85, 1980.

K. J. Bathe, “On the Current State of Finite Element Methods and our ADINA Endeavors”, J. Adv. Eng. Software, 2, 59-65, 1980.

K. J. Bathe and V. Sonnad, "On Effective Implicit Time Integration in Analysis of Fluid - Structure Problems", International Journal for Numerical Methods in Engineering, 15, 943-948, 1980.

K. J. Bathe and S. Ramaswamy, "An Accelerated Subspace Iteration Method", J. Comp. Meth. In Appl. Mech. and Eng., 23, 313-331, 1980.

J. L. Batoz, K. J. Bathe, and L. W. Ho, "A Study of Three-Node Triangular Plate Bending Elements", International Journal for Numerical Methods in Engineering, 15, 1771-1812, 1980.

K. J. Bathe, M. D. Snyder, A. P. Cimento, W. D. Rolph III, "On Some Current Procedures and Difficulties in Finite Element Analysis of Elastic-Plastic Response", J. Computers & Structures, 12, 607-624, 1980.

T. Ishizaki and K. J. Bathe, "On Finite Element Large Displacement and Elastic-Plastic Dynamic Analysis of Shell Structures", J. Computers & Structures, 12, 309-318, 1980.

M.D. Snyder and K. J. Bathe, "Finite Element Analysis of Thermo-Elastic-Plastic and Creep Response", Acoustics and Vibration Laboratory, Report 82448-10, Department of Mechanical Eng., M.I.T., December 1980.

K. J. Bathe, "The Current State of Finite Element Methods in Structural Mechanics", Proceedings of the Symposium on Design Applications of the Finite Element Method, University of Cape Town, January 1981.

K. J. Bathe, "Observations on the Current State of Finite Element Analysis", in NASA Langley Report CP 2147, 1981.

K. J. Bathe and V. Sonnad, "On Finite Element Analysis of Compressible and Incompressible, Temperature-Dependent Fluid Flow", Proceedings of the AIAA Computational Fluid Dynamics Conference, Palo Alto, California, June 1981.

M. D. Snyder and K. J. Bathe, "A Solution Procedure for Thermo-Elastic-Plastic and Creep Problems", J. Nuclear Engineering and Design, 64, 49-80, 1981.

M. S. Engelman, G. Strang, and K. J. Bathe, "The Application of Quasi-Newton Methods in Fluid Mechanics", International Journal for Numerical Methods in Engineering, 17, 707-718, 1981.

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F. G. Rammerstorfer, D. F. Fischer, W. Mitter, K. J. Bathe, and M. D. Snyder, "On Thermo-Elastic-Plastic Analysis of Heat Treatment Processes Including Creep and Phase Changes", J. Computers & Structures, 13, 771-779, 1981.

K. J. Bathe and S. Gracewski, “On Nonlinear Dynamic Analysis Using Substructuring and Mode Superposition”, J. Computers & Structures, 13, 699-707, 1981.

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K. J. Bathe and C. Almeida, “A Simple and Effective Pipe Elbow Element—Interaction Effects”, J. Appl. Mech., 49, 165-171, 1982.

C. Meyer and K. J. Bathe, “Nonlinear Analysis of R/C Structures in Practice”, J. ASCE, Structural Eng. Div., 108, 1605-1622, 1982.

K. J. Bathe and A. Chaudhary, “On the Displacement Formulation of Torsion of Shafts with Rectangular Cross-sections”, International Journal for Numerical Methods in Engineering, 18, 1565-1568, 1982.

K. J. Bathe and C. Almeida, “A Simple and Effective Pipe Elbow Element—Pressure Stiffening Effects”, ASME J. Appl. Mech., 49, 914-916, 1982.

W. D. Rolph III, and K. J. Bathe, “An Efficient Algorithm for Nonlinear Heat Transfer with Phase Changes”, International Journal for Numerical Methods in Engineering, 18, 119-134, 1982.

K. J. Bathe, C. Almeida, and L. W. Ho, “A Simple and Effective Pipe Elbow Element—Some Nonlinear Capabilities”, J. Computers & Structures, 17, 659-667, 1983.

K. J. Bathe and E. Dvorkin, “On the Automatic Solution of Nonlinear Finite Element Equations, J. Computers & Structures, 17, 871-879, 1983.

K. J. Bathe, E. Dvorkin, and L. W. Ho, “Our Discrete Kirchhoff and Isoparametric Shell Elements for Nonlinear Analysis—An Assessment”, J. Computers & Structures, 16, 89-98, 1983.

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M. Bercovier, Y. Hasbani, Y. Gilon, and K. J. Bathe, "On a Finite Element Procedure for Nonlinear Incompressible Elasticity", in Hybrid and Mixed Finite Element Methods, (S.N. Atluri et al, eds.), J. Wiley and Sons, 1983.

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R. Dietrich and K. J. Bathe, "Entwicklung von Finite-Element-Prozeduren für die Analyse von unter Wasser geschweissten Strukturen", Report GKSS 83/E/22, GKSS-Forschungszentrum Geesthacht GMBH, Geesthacht, Federal Republic of Germany, May 1983 (in German).

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W. D. Rolph III and K. J. Bathe, "On a Large Strain Finite Element Formulation for Inelastic Analysis", in Constitutive Equations, Micro, Macro and Computational Aspects, (K. Willam et al, eds.), ASME, AMD, 1984.

E. N. Dvorkin and K. J. Bathe, "El Metodo de Elementos Finitos en la Solucion de Problemas No-lineales de Mecanica del Solido", Journal Ciencia y Technica, Argentina (in Spanish), 1, No. 4, 1984.

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