

Curriculum vitae

Summer 2017

MARTIN PHILIP BENDSØE

Professor, cand.scient., dr.techn., Dr.h.c.
Born 29.12.1955; married, 2 children.

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DEGREES

1979 M.Sc. (cand.scient.) (Mathematics/physics), University of Copenhagen.
1983 Ph.D. (lic.techn.) Technical University of Denmark.
1995 Dr.techn., Technical University of Denmark.
2010 Dr.h.c., Universié de Liege, Belgium.

POSITIONS

1976-79 Teaching assistant, mathematics, University of Copenhagen.
1978 R&D assistant, DÆMPA A/S, Tommerup, Denmark.
1979-80 Assistant prof., Department of Mathematics, Technical Univ. Denmark (DTU).
1980-81 Research assistant, Department of Mathematics, DTU.
1981-82 Research fellow, Brown Univ., Providence, RI, USA (Rotary fellow).
1982-83 Research assistant, Department of Mathematics, DTU.
1983-84 Assistant prof., Department of Mathematics, DTU.
1984-89 Associate prof., Department of Mathematics, DTU.
1989-96 Docent, Department of Mathematics, DTU.
1989-92 Chairman, Department of Mathematics, DTU.
1995-98 Director of Ph.D.-studies, Technical University of Denmark.
since 1996 Professor, Department of Mathematics, DTU.
1998-2001 Chairman, Department of Mathematics, DTU.
2001-2006 Deputy Head of Department, Department of Mathematics, DTU.
2006-2009 Head of Department, Department of Mathematics, DTU..
2009-2017 Senior Vice President and Dean of Graduate Studies and International Affairs, DTU..
since 1.1.17 Special Advisor, Office of the President, DTU

OTHER

2011-2014 President, Danish Academy of Technical Sciences (vice-president 2009, president-elect 2010).
Member since 1997.
Since 2012 Member of the board of the COWI Foundation (vice-chairman since 2013).
Since 2016 Member of the board of Fondation Idella.
Since 2010 Member of the board of SDC-DK and of the Joint Managerial Committee, SDC (Sino-Danish Center for Education and Research, Beijing, China) (ex officio).
Since 2009 Member, Scientific Council, IGSSE – Int. Graduate School of Science and Engng., TU München.
2007-2011 Member of the Board of Birkerød Gymnasium (high-school).
2003-2007 President, International Society of Structural and Multidisciplinary Optimization (ISSMO) (Executive Committee 1995-2011, and Vice-President 1999-2003).
2002-2005 Chairman, ThinkTank, Danish Academy of Technical Sciences (Member-at-large 2005-2006).
2003-2009 Director of the DCAMM Research School.
2000-2011 Member of the Congress Committee, IUTAM (Executive Committee since 2004).

1995-2001 Member of the Industrial Ph.D.-committee, Danish Academy of Technical Sciences.
1994-2003 Member of the executive committee (vice chairman) ICMI-Denmark, Denmark's Committee for Mathematical Instruction.

AWARDS

1986 Direktør P. Gorm-Petersens Award.
1992 STATOIL Award.
1997 Villum Kann Rasmussens Annual Award.

RESEARCH PROJECTS

International collaboration - management experience

-Contractor, EF-SCIENCE project, with dr. Helder Rodrigues, CEMUL, Lissabon, 1988/1989.

-Main co-ordinator and contractor for TEMPUS JEP-0045 "Post-graduate programme in computer-aided design of structural and mechanical systems", 01.12.90 to 31.08.93. With 6 Polish, 1 Czech, 1 Slovak, 2 Danish, 2 German, 1 French, 1 Portuguese and 1 Italian universities. The project established 8 CAD-labs, organized 3 intensive courses and arranged long-term exchange visits for 33 students and 15 teachers.

-Danish coordinator (01.09.94 to 31.08.97) for "JEP-07228: Shape optimization. Applications to structures and environment" under TEMPUS-PHARE. With 4 Polish institutions and 13 universities and companies in Denmark, Belgium, Italy and France.

-Main co-ordinator and contractor for NorFa Network on Structural Optimization, 1/1-1997 til 31/12-1999. With Aalborg University, 3 universities in Sweden, 2 in Finland as well as 1 university in Latvia og Estonia Network for education of researchers.

-Danish coordinator, 1/8-2000 to 31/7-2004 for EU-TMR project "HMS2000 - Homogenization and Multiple Scales". With universities in France, Spain, Italy, Germany and Denmark.

-Main co-ordinator and contractor for the Ph.D.-project "Generation of Articulated Mechanisms by Optimization Techniques", sponsored by Toyota CDRL, Nagoya, Japan.

-Main co-ordinator and contractor for the EU-project PLATO-N, under the FP6 AERO-programme of EU, 2006-9. The project partners includes universities in Germany, Israel, UK and Denmark, as well as companies in Austria, Germany and the UK (including EADS-Germany og Airbus-UK).

-Danish coordinator for the EU-project FlowHead, under the FP7 Transport-programme of EU (FP7), 2008-12. The project partners includes universities in UK, Germany, Poland, Bulgaria and Denmark, as well as companies in France, Germany, and England (including Renault og VW).

Other international collaboration (formalized)

-Partner of a AGARD project "Shape Optimal Design of Composite Structures and Topology Design of Structures", 1989-94, with Instituto Superior Tecnico, Lisboa, Portugal and University of Michigan, USA.

-Partner of a AGARD project "Combining Local Optimization of Material Properties and Spatial Optimization of Material Distribution", 1995-97, with Instituto Superior Tecnico, Lisboa, Portugal and University of Michigan, USA.

-Partner of a AGARD project "Integrated Models for Material and Structure Optimal Design for Time-Dependent Phenomena", 2000-02, with Instituto Superior Tecnico, Lisboa, Portugal, University of Pennsylvania, USA and University of Michigan, USA.

- Partner in the project "Wavelet filters in topology design" with Seoul National University, Korea, 2002.

- "International collaborator" of the NSF Center for Process Simulation and Design, Univ. of Illinois, USA, 2002-2006.

-Coordinator for the Danish participation in the European Science Foundation network OPTPDE, 2008-14. (www.esf.org/optpde).

National collaboration – project management

-Principal investigator, Danish Technical Science Foundation project, “Optimization of rib-reinforced plates”, 1980-83.

-Project leader for a range of grants from DTU and Danish Technical Science Foundation for guest professors and Ph.D. courses, 1986, 1987, 1989, 1990, 1991, 1992, 1993, 1994, 1997 and 2001.

-Project leader for a range of grants from the Danish Research Academy for Ph.D. courses and guest professors, 1992, 1993, 1994, 1996 and 1997.

-Project leader for the Danish Natural Science Foundation network "Partial Differential Equations, Analysis and Applications", with 18 participants from Danish universities (DTU, KU, RUC, OU, AU, AUC), 1997-2000.

-Project leader for a grant from the Otto Mønstedts Foundation for a guestprofessor, 2000.

-Project leader for the Danish Natural Science Foundation network "Partial differential equations and applied functional analysis" with 16 participants from Danish universities (DTU, KU, RUC, OU, AU, AAU), 2000-02.

-Project manager for a number of consultant projects for Aasted-Mikroverk, Farum, 2004-2006.

Other national collaboration (formalized)

-Partner in the Danish Technical Science Foundation project “Computer Aided Design of Mechanical Systems”, 1987-89, with Department of Solid Mechanics, and Department of Ocean Engineering, DTU, and Department of Mechanical Engineering, Aalborg University.

-Partner in the Danish Technical Science Foundation project “Computer Aided Design of Mechanical Systems”, 1989-97, with Department of Mechanical Engineering, Aalborg University, and Department of Solid Mechanics, and Department of Mechanical Design, DTU.

-Partner in the Danish Technical Science Foundation project “Designing bandgap materials and structures with optimized dynamic properties”, 2003-2005, with Department of Mechanical Engineering, DTU.

-Partner in the Danish Natural Science Foundation project "Partial Differential Equations – Analysis, Modelling and Applications", 2003-05, with participants from Danish universities (DTU, KU, RUC, SDU, AU, AAU).

-Partner in the Danish Technical Science Foundation project “Models and methods for large-scale structural topology optimization with stress and displacement constraints”, 2004-2006.

-Partner in a project supported by Richterfonden “Topology optimization of multiphysics systems”, 2005-2006, with Department of Mechanical Engineering, DTU.

-Partner in the Danish Technical Science Foundation project “INNOJOINT”, 2006-2010, with Department of Mechanical Engineering, DTU.

Organization of international conferences etc

-Director of NATO Advanced Research Workshop "Optimal Topology Design of Structures", Sesimbra, Portugal, June 20-26, 1992. Sponsored by NATO, ARO, ONR, AFOSR og NSF(US).

-Chairman of the organizing committee, DCAMM Anniversary Meeting, Hotel Marina, Vedbæk, Denmark, 27. og 28. oktober, 1994.

-Member of Papers Committee, First World Congress of Structural and Multidisciplinary Optimization, Goslar, FRG, May 28 - June 2, 1995.

-Member of local organizing committee, ECMI '96: 9th European Industrial Mathematics Conference, Technical University of Denmark, June 25-29, 1996.

-Convenor of Mini-symposium on Structural Optimization, International Congress of Theoretical and Applied Mechanics, Kyoto, Japan, August, 1996.

-Organizer of Workshop on "Composite Materials and Systems with Multiple Scales", Hillerød, Denmark, Nov. 29 -Dec. 1, 1996.

-Organizer of NorFa Workshop on "Structural Optimization", Rebild, Denmark, May 2-4, 1997.

-Member of International Scientific and Advisory Board, Second World Congress of Structural and Multidisciplinary Optimization, Zakopane, Poland, May 1997.

-Member of International Scientific and Advisory Board, International Symposium on Optimization and Innovative Design, Tokyo, July 1997.

-Co-director (m. P.Pedersen, DTU) of IUTAM Symposium on "Synthesis in Bio Solid Mechanics", Hotel Frederiksdal, Virum, Denmark, May 24-27, 1998.

-Organizer (with E. Christiansen, Odense University) of Danish Symposium on Partial Differential Equations; Analysis and Applications, Odense University, May 28 and 29, 1998.

-Organizer (with J. Petersson, Linköpings Tekniska Högskola, Linköping, Sweden) of mini-symposium on "Topology design of structures and materials" at ECMI 98, Göteborg, June 23-27, 1998.

-Organizer of workshop on "Structural Optimization", Schæffergården, Copenhagen, Nov. 26, 1998.

-Chairman of Pre-nominated session on Structural Optimization, International Congress of Theoretical and Applied Mechanics, Chicago, August 2000.

-Member of the organizing committee, First International Workshop on Surrogate Modelling and Space Mapping for Engineering Optimization, Technical University of Denmark, November, 2000

-Organizer (with J.Rasmussen) of 2nd Max Planck Workshop on Engineering Design Optimization, Nyborg, Denmark, October 12-14, 2001

-Organizer (with J. Hugger and M. Vogelius) of 3rd Danish Symposium on Applied Analysis - "*Numerical and analytical problems of continuum mechanics, with special emphasis on singularities and multiple scales*" August 26-28, 2004, Copenhagen, Denmark.

-Organizer (with G. Buttazzo and A. Henrot) of Oberwolfach Seminar *Shape Optimization*, November 7-12, 2004, Mathematisches Forschungsinstitut Oberwolfach, Germany.

-Chairman (with O.Sigmund, DTU, and N. Olhoff, AAU as co-chairmen) for IUTAM Symposium on "Topological Design Optimization of Structures, Machines and Materials – Status and Perspectives", Denmark, 2005.

PUBLIC DUTIES - RESEARCH

Participation in scientific committees etc.

-Member of EC (as past-president), International Society of Structural and Multidisciplinary Optimization (ISSMO) (Member of the Executive Committee since 1995, Vice- President 1999-2003, President 2003-2007).

-Chairman, ThinkTank, Danish Academy of Technical Sciences, 2002-2005 (Member-at-large 2005-2006).

-Member of the Congress Committee, IUTAM, since 2000 (Executive Committee since 2004).

-Member of the Industrial Ph.D.-committee, Danish Academy of Technical Sciences, 1995-2001.

-Member of the executive committee (vice chairman) ICMI-Denmark, Denmark's Committee for Mathematical Instruction, 1994-2003. Danish representative in ICMI (International Commission on Mathematical Instruction), 1994-1999.

- Member of the Danish Academy of Technical Sciences, ATV, since 1997.
- Member of the scientific council, DCAMM (Danish Center for Applied Mechanics and Mathematics), since 1990.
- Member of Nationalkomiteen for Matematik under Videnskabernes Selskab, 1994-2006.
- Member of Nationalkomiteen for IUTAM under Videnskabernes Selskab. Secretary from 2004.
- Member of Fagligt Forum under Statens Teknisk Videnskabelige Forskningsråd, 1997-2005.
- Member of subcommittee for the ICIAM Lagrange Prize (ICIAM 2003 Sydney Congress), 2001-2003.
- Member of board, Guldbælgfondens for Alex Foss, G.A.Hagemann og Julius Thomsen, since 2002.

Committee work for international conferences etc

- Member of Conference Editorial Board, "Computational Structures Technology 1994", Athens, August 30-September 1, 1994.
- Member of Papers Committee, First World Congress of Structural and Multidisciplinary Optimization, Goslar, FRG, May 28 - June 2, 1995.
- Member of International Scientific and Advisory Board, Second World Congress of Structural and Multidisciplinary Optimization, Zakopane, Poland, May 1997.
- Member of International Scientific and Advisory Board, International Symposium on Optimization and Innovative Design, Tokyo, July 1997.
- Member of the Scientific Committee, NATO ARW Topology Optimization of Structures and Composite Continua, Budapest, May 2000.
- Chairman of the International Papers Committee, Fourth World Congress of Structural and Multidisciplinary Optimization, Dalian, China, June, 2001.
- Member of the International Papers Committee, Fifth World Congress of Structural and Multidisciplinary Optimization, Lido de Jesolo, Italy, May, 2003.
- Member of the program committee of and reviewer for of the International Conference on Modeling, Simulation, Optimization for Design of Multi-disciplinary Engineering Systems (MSO-DMES), Goa, India on September 24-26, 2003.
- Member of the conference scientific committee and organizer (with A.Diaz) of a Minisymposium on *Structural Optimization - Multiphysics Problems in Shape and Topology Design* at the Seventh U.S. National Congress on Computational Mechanics (USNCCM7), July 28-30, 2003.
- Member of the conference scientific committee of the Eight U.S. National Congress on Computational Mechanics (USNCCM8), July 25-27, 2005.
- Member of the scientific committee of the 3rd European Conference on Computational Mechanics, Lisboa, Portugal, June 5-9, 2006.
- Member of the conference scientific committee 9th U.S. National Congress on Computational Mechanics (USNCCM IX), July 23-26, 2007.

Editorial duties

Member of the editorial boards of the international journals:

- International Journal for Computational Methods in Engineering Science and Mechanics, since 2007.
- Computers and Structures, since 2005.
- International Journal of Numerical Methods in Engineering, 2000-2011.
- Structural and Multidisciplinary Optimization, since 1996.
- Control and Cybernetics, 1993-2003.
- Communications in Numerical Methods in Engineering, 2005-2010.
- ESAIM: COCV (European Series in Applied and Industrial Mathematics), 2000-2003.
- Archive for Applied Mechanics, 1997-2003.

Referee-duties for

- Advances in Engineering Software
- Advances in Mathematical Sciences and Applications
- Aerospace Science and Technology - AST
- AIAA Journal
- ASCE Journal of Structural Engineering
- ASME Journal on Applied Mechanics
- ASME Journal on Mechanical Design
- ASME Transactions on Electronic Packaging
- Cambridge University Press (books)
- Communications in Numerical Methods in Engineering
- Composites - Part B Engineering
- Computational Optimization and Applications
- Computer-Aided Design
- Computer Methods in Applied Mechanics and Engineering
- Computers and Structures
- Computers & Industrial Engineering
- Computing (Springer Verlag)
- Computing Systems in Engineering
- Control and Cybernetics
- Engineering Optimization
- Engineering with Computers
- European Journal of Mechanics
- European Journal of Operational Research
- Finite Elements in Analysis and Design
- IEEE CDC Conferences
- International Journal of CAD/CAM
- International Journal of Numerical Methods in Engineering
- International Journal of Solids and Structures
- Journal of Computational Methods
- Journal of Mechanics of Materials and Structures
- Journal of Optimization Theory and its Applications
- Journal of Sound and Vibration
- Journal of the Mechanics and Physics of Solids
- Mathematical Programming B
- Mechanics of Structures and Machines
- Numerical Linear Algebra with Applications
- Optimal Control Applications and Methods
- Optimization and Engineering
- Optics Letters
- Oxford University Press (books)
- Proc. Royal Society, A
- Quarterly of Applied Mathematics
- SIAM J. Applied Mathematics
- SIAM J. Optimization
- Structural and Multidisciplinary Optimization
- Structural Engineering and Mechanics

International evaluations

- evaluation of "thèse de 3^{me} cycle", L'École Centrale de Lyon, France (1986).
- opponent, doctoral degree, University of Jyväskylä, Finland (1987).
- evaluation report, associate professor with tenure, University of Michigan, USA (1988).
- opponent, doctoral degree, Inst. of Aeronautical Structures and Materials, KTH, Stockholm, Sweden (1988).
- opponent, doctoral degree, University of Jyväskylä, Finland (1990).
- evaluation report, associate professor with tenure, Michigan State University, USA (1991).
- evaluation report, full professor with tenure, Rensselaer Polytechnic Institute, USA (1992).
- opponent, doctoral degree, Inst. of Aeronautical Structures and Materials, KTH, Stockholm, Sweden (1992).
- evaluation report, associate professor with tenure, Worcester Polytechnic Institute, USA (1993).
- evaluation report, associate professor with tenure, Rice University, Texas, USA (1993).
- opponent, doctoral degree, Dept. of Mechanical Engng., Technical University of Linköping, Sweden (1995).
- opponent, "thèse de 3^{me} cycle", Université de Liege, Belgium (1995).
- evaluation report, associate professor with tenure, University of Michigan, USA (1996).
- evaluation report, fellow, Center for Advanced Study, University of Illinois, Urbana-Champaign, USA (1997).
- evaluation report, Collaborative Research Grant proposal, NATO Scientific Affairs Division (1997).
- evaluation report, docentur, Luleå Tekniska Universitet (1997).
- evaluation report, Ministry of Research, Slovenia (1997).
- evaluation report, associate professor with tenure, The Medical School, University of Michigan, USA (1997).
- evaluation reports, Teknikvetenskabelige ForskningsRådet, Sweden (1997, 1998).
- evaluation report, associate professor with tenure, University of Michigan, USA (1997).
- opponent, doctoral degree, Institut für Baustatik, Universität Stuttgart, Germany (1998).
- member of Ph.D.- committee, Department of Mechanical and Industrial Engineering, University of Illinois, Urbana-Champaign, USA (1998).
- evaluation report, grant proposal, Swiss National Science Foundation (1998).
- evaluation report, assistant professor with tenure, University of Pennsylvania USA (1999).
- evaluation report, chaired professor, Colorado State University, USA (1999).
- evaluation report, professor with tenure University of Wisconsin, Madison, USA (1999).
- evaluation report, grant proposal, The Israel Science Foundation (1999).
- evaluation report, assistant professor, University of Colorado at Boulder, USA (1999).
- evaluation report, grant proposal, National Research Foundation, South Africa, (2000).
- evaluation report, chaired professor, Worcester Polytechnic Institute, USA (2000).
- member of the evaluation and hiring committee, professor, KTH, Stockholm, Sweden (2000).

- evaluation report, grant proposal, DFG, Germany (2000).
- evaluation report, doctoral thesis, Institut für Angewandte Mathematik II, Universität Erlangen-Nürnberg, Germany (2000).
- evaluation report, assistant professor with tenure, University of Pennsylvania USA (2001).
- evaluation report, grant proposal, ETH, Zürich (2001).
- evaluation report, grant proposal, Swiss National Science (2001).
- evaluation report, habilitation, ved Fakultät für Mathematik und Physik, Universität Bayreuth, Germany (2001).
- evaluation report, associate professor with tenure, Biomedical Engineering Department of Medical Engineering University of Michigan, USA (2001).
- evaluation report, 'Trustees Award', Worcester Polytechnic Institute, USA (2002).
- evaluation report, grant proposal, Swiss National Science (2002).
- evaluation report, associate professor with tenure, University of Pennsylvania USA (2002).
- evaluation report, senior researcher, Fraunhofer-Chalmers Research Centre (2002).
- opponent, doctoral degree, Department of Mechanical Engineering, Tekniska Högskolan i Linköping, Linköping, Sweden (2002).
- evaluation report, associate professor with tenure, University of California, Los Angeles, USA (2002).
- evaluation report, grant proposal, Swedish Research Council (2002).
- evaluation report, associate professor with tenure, Lehigh University, Bethlehem, PA, USA (2002).
- evaluation report, associate professor with tenure, University of Colorado at Boulder, USA (2002).
- evaluation report, grant proposal, FWF- Der Wissenschaftsfonds, Austria, (2003).
- opponent, doctoral degree, Department of Mathematics (Optimization and Systems Theory), KTH, Stockholm, Sweden (2003).
- evaluation report, associate professor with tenure, Department of Mechanical and Aerospace Engineering, University of Florida, Gainesville, USA (2003).
- evaluation report, associate professor with tenure, Indian Institute of Science, Bangalore, India (2003).
- evaluation report, professor with tenure, of Mathematics, Temple University, USA (2003).
- member of evaluation committee, professor position, KTH, Stockholm, Sweden (2004).
- opponent, doctoral degree, Department of Mathematics, Chalmers, Göteborg, Sweden (2004).
- opponent, "thèse doctorale", Université Paul Sabatier, Toulouse, France (2004).
- evaluation report, "Habilitation à Diriger des Recherches", Université Pierre et Marie Curie, Paris (2004).
- evaluation report, grant proposal, DFG, Germany (2004).
- evaluation report, 'Directeur de Recherche', INRIA, Paris, France (2005).
- evaluation report, professor, Université Pierre et Marie Curie, Paris (2005).
- evaluation report, grant proposal, National Research Foundation, South Africa (2005).

- evaluation report, professor, CNRS, Paris, France (2005).
- evaluation report, associate professor with tenure, University of Colorado at Boulder, USA (2005).
- evaluation report, professor with tenure, Departments of Biologic & Materials Sciences and Biomedical Engineering, University of Michigan, USA (2005).
- evaluation report, assistant professor with tenure, University of Pennsylvania, USA (2006).
- opponent, doctoral degree, Johannes Kepler Universität Linz, Austria (2006).
- evaluation report, 'Directeur de Recherche de deuxième classe', INRIA, Paris, France, i forbindelse med en ansættelse af en (2006).
- report to U.S. National Research Council Panel on Benchmarking the Research Competitiveness of the U.S. in Mechanical Engineering (2006).
- evaluation report, professor with tenure, Center for Computation and Technology, Louisiana State, Baton Rouge, Louisiana, USA (2006).
- evaluation report, associate professor with tenure, Department of Mechanical and Aerospace Engineering, University of Florida, Gainesville, USA (2007).
- member of jury, call "Mathematics and...", Vienna Science and Technology Fund WWTF (www.wwtf.at) (2007).
- evaluation report, chaired professor, College of Engineering, The University of Iowa, Iowa City, USA (2008).
- member of evaluation committee, 4 associate professor positions, Lunds Tekniska Högskola, Sweden (2008).
- member of evaluation committee, promotion to professor, Lunds Tekniska Högskola, Sweden (2008).
- evaluation report, grant proposal, FWF- Der Wissenschaftsfonds, Austria, (2008).

Other evaluations

- member of evaluation committee, assistant professor position, Odense University, DK (1984).
- member of evaluation committee, post.doc. position, Odense University, DK (1985).
- member of evaluation committee, part-time assistant professor positions, Department of Mathematics, DTU (1985).
- member of evaluation committee, associate professor position, Department of Mathematics, DTU (1988).
- member of evaluation committee, part-time lecturers positions, Department of Mathematics, DTU (1987 og 1988).
- member of evaluation committee, part-time assistant professor positions, Department of Mathematics, DTU (1988).
- chair, evaluation committee, assistant professor position, Department of Mathematics, DTU (1990).
- external examiner, Ph.D.-thesis, Department of Mechanical Engineering, Aalborg University (1990).
- member of evaluation committee, senior associate professor positions, DTU (1990).
- chair, evaluation committee, associate professor position, Department of Mathematics, DTU (1991).
- external examiner, Ph.D.-thesis, Institut for Bygningsteknik, Aalborg University (1992).
- external examiner, Ph.D.-thesis, Department of Mechanical Engineering, Aalborg University (1992).
- chair, evaluation committee, associate professor position, Department of Mathematics, DTU (1994).

- chair, evaluation committee, associate professor position, Department of Mathematics, DTU (1995).
- external examiner, Ph.D.-thesis, Department of Mechanical Engineering, Aalborg University (1996).
- external examiner, Ph.D.-thesis, Mikroelektronikcenteret, DTU (1997).
- external examiner, Ph.D.-thesis, Department of Solid Mechanics, DTU (1998).
- member of evaluation committee, assistant research professor position, Department of Solid Mechanics, DTU (1999).
- member of evaluation committee, one professor, one associate and one assistant professor position, in applied mathematics, University of Southern Denmark (1999).
- member of evaluation committee, one associate and one assistant professor position, in applied mathematics, University of Southern Denmark (2001).
- member of the committee for evaluation of the Industrial Ph.D.-program (Erhvervsfremmestyrelsen) (2001).
- external examiner, Ph.D.-thesis, Department of Mechanical Engineering, Aalborg University (2002).
- medlem af bedømmelsesudvalg ved DTU i forbindelse med besættelse af en lektor i fasstofmekanik (2004).
- member of evaluation committee, full professor position in applied mathematics, University of Southern Denmark (2004).
- external examiner, Ph.D.-thesis, IMM, DTU (2004).
- external examiner, Ph.D.-thesis, Department of Mechanical Engineering, Aalborg University (2004).
- member of evaluation committee, full professor position in applied mechanics, University of Aarhus (2007).
- member of evaluation committee, full professor position in applied mathematics, University of Southern Denmark (2007).

Collaboration with co-authored publications (not Ph.D.-students)

- N. Olhoff, Aalborg University, 1981-2005.
- J.E.Taylor, University of Michigan, 1982-2005.
- J.Sokolowski, Polish Academy of Sciences, 1983-87, 1992-93.
- G.I.N.Rozvany, Universitetät Essen, 1984-1985, 1994.
- N.Triantafyllidis, University of Michigan, 1985-89.
- N.Kikuchi, University of Michigan, 1986-92.
- P.Pedersen, DTU Mechanical Engineering, DTU, 1987-2000.
- A.Diaz, Michigan State University, 1988-2005.
- H.C.Rodrigues, Techn. University of Lisbon, 1988-2005.
- C.Mota Soares, Techn. University of Lisbon, 1988-90.
- B.Haber, Univ. of Illinois at Urbana-Champaign, USA, since 1990.
- C. Jog, Indian Institute of Science, USA, 1990-95.
- R.T.Haftka, Virginia Polytechnic, USA, 1990-91.
- A.Ben-Tal, Technion, Israel, 1990-94.
- J.Rasmussen, Aalborg University, 1989-1993.
- J.Zowe, Univ.Baureuth, FRG, 1991-2000.
- M.Kocvara, nu University of Birmingham, UK, 1997-2006.
- W.Achtziger, Universität Dortmund, Germany, 1991-2001.
- J.M.Guedes, CEMUL/IDMEC, IST, Lissabon, Portugal, 1992-2003.
- R.Lipton, Worcester Polytechnic, MA, USA, 1993-2002.
- O.Sigmund, DTU Mechanical Engineering, DTU, since 1994.
- M.M.Neves, IDMEC, IST, Lissabon, Portugal, 2000-2004.
- D.Tortorelli, Univ. of Illinois at Urbana-Champaign, USA, 2001-07.
- Y.Y.Kim og G-H Yoon, Seoul National University, Korea, 2003-4.
- E.Lund og J.Stegmann, Aalborg University, 2004-05.
- M.Stolpe, DTU Mathematics, DTU, since 2004.

-G.Allaire, Ecole Polytechnique, 2005-6.

TEACHING and SUPERVISION EXPERIENCE

Public duties

- National representative for Denmark in ICMI (International Commission on Mathematical Instruction), 1994-99.
- member of the executive committee (vice-chairman) ICMI-Danmark, Dansk Matematikundervisningskommision, since 1994-2003.
- member of the board of the highschool Birkerød Gymnasium, HF og IB, since 2007.

Other:

- participation in 6th. and 7th. Nordic Conference on the Teaching of Mathematics at Technical Universitites (1983 hhv. 1987).
- organizer of 7th Nordic Conference on the Teaching of Mathematics at Technical Universitites, Aalborg, 1987.

Teching in standard courses at DTU

- 0113 Lineær algebra.
- 0122 Lineære differentia ligninger.
- Analyse 1 (new curriculum).
- Analyse A (new curriculum).
- 0130 Analyse 3 (new curriculum).
- 01005 Matematik 1 (second revised version).
- 01007 MAT-Design (new course).
- 01457 Variationelle metoder (new course).

Bachelor projects at DTU

- Optimal dimensionering - modellering og beregning, 2003 (Rapport-titel: Optimization of Compliant Mechanisms using Genetic Algorithms).
- On the problem of optimal insulation, 2005. Guest student from Ecole Polytechnique, Paris.
- Optimal dimensionering - modellering og beregning, 2005 (Rapport-titel: Optimal topologidesign af varmeledere).
- On the problem of optimal insulation in a mixed-integer format, 2008. Guest student from Ecole Polytechnique, Paris.

M.Sc. projects at DTU

- Næsten afkobling af forstyrrelser i lineære systemer - en geometrisk betragtning. 1987.
- Observerbaseret forstyrrelsesafkobling i lineære styresystemer - en geometrisk betragtning. 1988.
- Optimization of composite materials. EF-TEMPUS studerende, 1993.
- Optimal shape design of frames under civil engineering codes. EF-TEMPUS studerende, 1995.
- Robust Output Regulation of a Flexible Arm. ERAMUS-studerende, 1997.
- An Algorithm for Design of Reduced Order Controllers, 1997.

- Disjoint paths (projekt med Aasted-Mikroverk, Farum), 2005.
- Topology optimization for acoustic problems. 2005. Medvejleder. Med MEK-DTU.
- Topology optimization -- computational experiments with new methods that avoid singular stiffness matrices, 2008.

Other courses

- Course on *Optimal Design of Structures*, 1 week, Johannes Kepler Universität Linz, Austria, 1994, 12 students (ECMI/ERASMUS exchange).

Ph.D. courses and continuing education courses (planning and teaching)

- Course on *Computer Aided Topology Design of Structures*, Ford Motor Company, Dearborn, Michigan, USA, 1992, 15 participants.
- Course on *Topology Design of Structures*, ph.d. kursus ved DTU, 1993, 25 students.
- Course on *Advanced Topics in Structural Optimization: Materials and Algorithms*, ph.d. kursus ved DTU, 1996, 13 students.
- Ph.D.-course / Advanced school: *Advanced Topics in Structural Optimization*, DTU, Lyngby, June 25 - July 3, 1998, DCAMM International Graduate Research School, 1998, 40 students.
- Ph.D.-course / Advanced school: *Advanced Topics in Structural Optimization - Topology Design - Theory and Practice*, DTU, Lyngby, June 22 - 30, 2000, DCAMM International Graduate Research School, 2000, 25 students.
- Ph.D.-course / Advanced school: *Topology Optimization - Theory, Methods and Applications*. Technical University of Denmark, Lyngby, Denmark, June 19 - 25, 2003, DCAMM International Graduate Research School. 29 students (including 5 from industry - Volvo, Vestas, Grundfos, Toyota, EADS).
- Ph.D.-course / Advanced school, Oberwolfach Seminar *Shape Optimization*, Mathematisches Forschungsinstitut Oberwolfach, Germany, November 7-13, 2004.
- Ph.D.-course / Advanced school: *Topology Optimization - Theory, Methods and Applications*. Technical University of Denmark, Lyngby, Denmark, June 8 -- 14, 2005, DCAMM International Graduate Research School. 36 participants from 14 countries. Industrial participants from Volvo and EADS.
- Ph.D.-course / Advanced school: *Topology Optimization - Theory, Methods and Applications*. Technical University of Denmark, Lyngby, Denmark, June 20 -- 26, 2007, DCAMM International Graduate Research School. 36 participants from 11 countries. Industrial participants from Dong and EADS.

Other teaching, Ph.D. courses and continuing education courses

- COMETT course on *Computer aided optimal structural design*, Aalborg, DK (1989).
- COMETT course on *Computer aided optimal structural design*, Pavia, Italy, (1989).
- COMETT course on *Analysis and design of structures made of composite materials*, Politecnico di Milano, Italy (1990).
- Advanced TEMPUS course on *Numerical Methods in Computer Aided Optimal Design*, Zakopane, Poland (1992).
- COMETT/CIMI/CIMPA Course on *Conception optimale de structures assistée par ordinateur*, Nice, France (1992).
- COMETT course on *Conception optimale de structures assistée par ordinateur*, Liege, Belgium (1992).
- Minisemester on *Parametric and shape optimization*, Banach Center, Warsaw, Poland (1993).

- COMETT course on *Computer aided optimal design of structures*, AUC, Denmark (1993).
- COMETT course on *Computer aided optimal design*, Bayreuth, FRG (1993).
- Forskarkurs i *Konstruktionsoptimering*, Mitthögskolan, Östersund, Sweden (1994).
- IUTAM International Summer School on Mechanics: *Concurrent Engineering Tools for Dynamic Analysis and Optimization*, Aalborg University, Aalborg, Denmark (1994).
- DTU/IMM ph.d.-kursus i *Optimering af store ikke-lineære modeller* (1995).
- Advanced TEMPUS-AIMETA course on *Optimal Design Theory and Applications*, Università de Pavia, Italy, (1996).
- Advanced Optimization and Visualization for Engineering Applications* (a EU-Leonardo Advance Course), Department of Solid Mechanics, Technical University of Denmark (1999).
- Advanced course Computer Aided Topology Optimization*, Wissenschaftszentrum Schloß Thurnau, Universität Bayreuth, Germany (2000).
- Advanced School and Workshop on Bone Mechanics - Mathematical and Mechanical Models for Analysis and Synthesis*, Instituto Superior Técnico, Lisbon, Portugal (2002).
- Topology Optimization Days - The State-of-the-Art in Theory, Software, and Applications*. Wissenschaftszentrum Schloß Thurnau, Germany (2003).
- Workshop on *Optimal Design - Theory and Industrial Applications*, University of Heidelberg, Germany (2004).
- Summer School 2004 - *Homogenization and Shape Optimization*, CMAF, Lisboa, Portugal (2004).

Ph.D. supervision

- Dimensionering af tilbagekoblingsmekanismer for lineære styresystemer med flere ind- og udgange (H-infinity control) (1987-1990). Main supervisor. Project with Institutet for Kemiteknik. End date 1991. Candidate nu professor ved Aalborg University.
- Styring af distribuerede systemer med randdata (1987-90). Co-supervisor. Projekt with RUC. End date 1990. Candidate nu lektor ved MAT-DTU.
- Integreret design af styrede fleksible konstruktioner (Integrated design of structure and controls) (1988-91). Co-supervisor. Project with Inst. for Styreteknik, DTU. End date 1991. Candidate now with NNE.
- Topologioptimering af gitterkonstruktioner (Truss topology optimization) (1992-1995). Main supervisor. Samarbejde med Afdelingen for Faststofmekanik, DTU. End date 1996. Candidate now IT consulatant in Brazil.
- Optimering af "smarte" konstruktioner (Optimal design of smart structures) (STVF-projekt) (1993-1994). Co-supervisor. Project with Afdelingen for Faststofmekanik, DTU. End date 1994. Candidate now professor ved MEK-DTU.
- Shapeoptimization of dies for cold forging (1994-1996). Co-supervisor. Projekt with University of Ljubljana, Slovenien, EF-TEMPUS). End date 1996.
- Optimering af laminatkonstruktioner (Design of Laminates) (1994-1997). Co-supervisor. Project with Department of Solid Mechanics, DTU. End date 1997. Candidate now with Zacco Denmark A/S.
- Robust styring af distribuerede systemer (Robust control) (STVF-projekt) (1993-1997). Main supervisor. End date 1997.
- Optimeringsmetoder til dimensionering af robuste regulatorer (Optimization and H-infinity control) (STVF-projekt) (1994-1997). Co-supervisor. Project with Institut for Automation, DTU. End date 1997. Candidate now with Microsoft Denmark.

- Optimalt design i biomekaniske applikationer (Optimal design and biomechanics) (1996-1999). Co-supervisor. Project with Department of Solid Mechanics, DTU. End date 1999. Candidate now with Price Waterhouse.
- Multiscale representation in design optimization (1998-2002). Co-supervisor. Project with Department of Solid Mechanics, DTU. Candidate now with Novozymes.
- Design for crashworthiness (1999-2002). Co-supervisor. Project with Department of Solid Mechanics, DTU. Candidate now with FE-Design, Germany.
- Design of MEMS (1999-2002). Co-supervisor. Project with Department of Solid Mechanics, DTU. Candidate now with Risø.
- Generation of Articulated Mechanisms by Optimization Techniques (2001-2004). Main supervisor. Project with Institut for Mekanik, Energi og Konstruktion, DTU. Project sponsored by Toyota Research Labs, Japan. Candidate now with Toyota CDRL.
- Topology design with pressure loads. Main supervisor. 5 months project for visiting Ph.D. student from Ecole des Mines, Nancy, France. Project sponsored by EU. Candidate now with IFP (French Institute of Oil).
- Topology optimization for flows in a multiphysics setting (2004-2007). Main supervisor. Project with Institut for Mekanik, Energi og Konstruktion, DTU. Candidate now assistant professor at Institut for Mekanik, Energi og Konstruktion, DTU
- Topology optimization of surface acoustic wave devices (2006-2009). Co-supervisor. Project with Institut for Mekanik, Energi og Konstruktion, DTU.
- Topology optimization problems with design-dependent sets of constraints (2006-2009). Main supervisor. Project with Institut for Mekanik, Energi og Konstruktion, DTU.
- Tool optimization for welding processes (2006-2009). Main supervisor. Project with Institut for Produktion og Ledelse.
- Thermomechanical modelling and optimization of dynamical proces conditions in friction stir welding (2006-2009). Co-supervisor. Project with Institut for Produktion og Ledelse.
- Topology Optimization for Crashworthiness Design Using Approximate Procedures (2007-2010). Main supervisor. Project with Institut for Mekanisk Teknologi, DTU.
- Multi-material Design Optimization of Composite Structures (Multiscale Optimization of Materials Subjected to Impact Loading (2008-2011). Co-supervisor. Project with Institut for Mekanisk Teknologi, DTU og Technische Universität München.

Supervision of postdocs

- H.C. Rodrigues, CEMUL, IST, Lissabon, Portugal (8 mth., 1988-89, EF-SCIENCE). Now full professor and chairman at IST, Portugal.
- J.M. Guedes, CEMUL, Lissabon, Portugal (4 mth., 1992, INIC/Forskerakademiet). Now associate prof. at IST, Portugal.
- W. Achtziger, Universität Bayreuth, FRG (5 mth., 1994, Forskerakademiet). Now full professor at University of Erlangen, Germany.
- C. Jog, Univ.Illinois at Urbana-Champaign, Ill, USA (12 mth., 1994-95, DTU). Now professor at IIS, Bangalore, India.
- J. Petersson, Linköpings Tekniska Högskola, Linköping, Sweden (12 mth., 1996-97, Swedish TFR midler). Deceased. Last position: Senior researcher at Fraunhofer Institute, Chalmers University, Sweden.
- P. Duysinx, Universite de Liege, Belgium (12 mth., 1996-97, Forskerakademiet). Now full professor at Université de Liege, Belgium.

- B. Bourdin, Universite de Paris 13, France (15 mth., 1998-99, DTU). Now full professor at Louisiana State University, USA.
- M.M. Neves, CEMUL, Lissabon, Portugal (5 mth., 2001, EU). Now associate prof. at IST, Portugal.
- L. Thevenot, Universite de Franche-Comte, Besancon, France (6 mth., 2002, EU).
- N. Varchon, Universite de Franche-Comte, Besancon, France (6 mth., 2002-03, EU).
- J. Bellido, Universidad de Castilla-La Mancha, Spain (6 mth., 2003, EU). Now associate prof. at Universidad de Castilla-La Mancha, Spanien.
- M. Stolpe, KTH, Stockholm, Sweden (14 mth., 2003-04, SNF og DTU). Now professor at DTU Wind Energy.
- Roman Stainko, Linz University, Austria (12 mth., 2006-07, EU). Now with RISC Software, Linz, Austria.
- Michael Bogomolny, Technion, Haifa, Israel (24 mth., 2006-08, FTP og EU). Now with Altair in California.

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