

## FOREWORD

This annual report about the year 2002 contains information on publications, seminars and guests. A list of DCAMM reports number 1-612 including the final references and also a list of the DCAMM S-reports number S1-S84 is available on request.

The report serves mainly as reference and documentation for accomplished activities. Information on the actual activities are available on our homepage: [www.mek.dtu.dk](http://www.mek.dtu.dk) and on the homepages of the cooperating departments of the center.

In the year 2002 the DCAMM Graduate Research School gave 3 advanced courses:

- 1) Stability of Ships, 10-18 June
- 2) Optimal designs- Size, Shape and Topology, 20-28 June
- 3) Machine Acoustics, 20-24 August

The school was visited by 3 guestprofessors, 8 guestlecturers, 3 gueststudents and 63 course participants. With very limited financial support, the school continues its activities in year 2003.

The departments cooperating within DCAMM are:

from Technical University of Denmark:

IMM: Dept. of Informatics and Mathematical Modelling

MAT: Dept. of Mathematics

MEK-ET: Dept. of Mechanical Engineering, Fluid Mechanics and Energy Egnn.

MEK-FAM: Dept. of Mechanical Engineering, Solid Mechanics

MEK-K&P: Dept. of Mechanical Engineering, Engineering Design

MEK-MT: Dept. of Mechanical Engineering, Maritime Engineering

MEK-VB: Dept. of Mechanical Engineering, Coastal and River Eng.

from Aalborg University:

IFB-AAU: Building Technology and Structural Engineering

IME-AAU: Institute of Mechanical Engineering

In 2002 the center organized an international Symposium on "Challenges in Applied Mechanics", held here in Kgs. Lyngby at Hotel Frederiksdal. A short report from the Symposium is given on page 36.

I thank our international contacts for their support and inspirations.

Pauli Pedersen

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## 1. MEMBERS 2002

23 professors  
73 scientific members            at the seven cooperating institutes at the Center  
40 Ph.D.-students

35 elected members  
14 foreign members

(A complete list of names is given in the Appendix).

## 2. FOREIGN MEMBERS

Professor Hassan Aref  
Virginia Polytechnic Institute & State University  
333 Norris Hall  
Blacksburg, VA 24061-0217  
USA

Professor G.I. Barenblatt  
Department of Mathematics  
UC Berkeley

USA

Professor John P. Breslin, Dr. Sc.  
Calle Dinamarca 7  
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Spain

Professor Germund Dahlquist  
Kungliga Tekniska Högskolan  
Stockholm  
Sweden

Professor John W. Hutchinson  
Division of Applied Sciences  
Harvard University, 315 Pierce Hall  
29 Oxford St.  
Cambridge, MA 02138, USA

Professor Joseph B. Keller  
Departments of Mathematics and Mechanical Engineering  
Stanford University  
Stanford, California  
USA

Professor Michael S. Longuet-Higgins  
UCSD

USA

Professor Ole Secher Madsen  
Ralph M. Parsons Lab., Dept. of civil Eng.  
Massachusetts Institute of Technology  
Cambridge, MA 02139  
USA

Professor Alan Needleman  
Division of Engineering, Box D  
Brown University  
Providence, RI 02912  
USA

Professor S. Nemat-Nasser

University of California in San Diego  
La Jolla, CA 92093, 0416  
USA

Professor D.H. Peregrine  
School of Mathematics  
University Walk  
Bristol BS8 1TW  
UK

Professor Bertil Storåkers  
Kungliga Tekniska Högskolan  
S-100 44 Stockholm  
Sweden

Professor Ib A. Svendsen  
Department of Civil Engineering  
University of Delaware, Newark, DE 19716  
USA

Professor John E. Taylor  
Department of Aerospace Engineering  
Aerospace Engineering Building  
University of Michigan  
Ann Arbor, MI 48109  
USA

### 3. GUESTS FOR EXTENDED PERIODS IN 2002

Tyler Bruns, Dept. of Mechanical Engineering, University of Illinois, Urbane, USA  
(January 1 - February 28)

Gil Ho, Ph.D. student, Korea (February 27 - April 1)

Oleg Kirillov, Institute of Mechanics, Moscow State Lomonosov University,  
Moscow, Russia (February 1 - April 1 and October 1 - November 30)

Alan Needleman, Professor, Division of Engineering, Brown University, USA  
(January 16 - 20)

Parviz Nikraves, Dr., University of Arizona, Tucson, USA (July 7 - August 1)

Ivindra Pane, Department of Civil Engineering, University of Michigan, Ann Arbor,  
USA (March 1 - August 31)

Alija Picuga, Professor, Faculty of Mechanical Engineering, University "Dzemail  
Bijedic", Mostar, Bosnia and Herzegovina (January 1 – 14, July 19 – 28)

Alexander Seyranian, Professor, Moscow State Lomonosov University, Russia (July 5  
- August 10)

#### 4A. SCIENTIFIC PUBLICATIONS IN PROCEEDINGS AND MONOGRAPHS IN 2002

Krishnaswamy, P., Andersen, P. & Kinnas, S.A.: Re-Entrant Jet Modelling for Partially Cavitation Two-Dimensional Hydrofoils, In Proc. Proc CAV2001, Fourth International Symposium on Cavitation, Pasadena, California, June 2001.

Kappel, J. & Andersen, P.: KAPPEL Propeller. Development of a Marine Propeller with Non-planar Lifting Surfaces. In: Proceedings of The 24th Motor Ship Marine Propulsion Conference. Copenhagen, April 2002. Surrey, United Kingdom, Highbury Business Communications.

Friesch, J., Kim, K.-H., Andersen, P., Bark, G., Chang, B. J., Di Felice, F. & Sasaki, N. The Specialist Committee on Cavitation Induced Pressures, Final Report and Recommendations to the 23rd ITTC. In: Enrico De Bernardis(ed.), Proceedings of the 23rd International Towing Tank Conference, Venezia, Italy, September 2002, Roma, INSEAN The Italian Ship Model Basin, Vol. 2, 2002, pp. 409-450.

Corney, J. F. & Bang, Ole: Modulational-instability gain bands in quasi-phase-matched materials, Proceedings of the Australian Institute of Physics 15th Biennial Congress 2002, 8-11 July 2002, pp. 280-282.

Nikolov, N.I.; Bang, Ole & Bjarklev, A.: Improving efficiency of supercontinuum generation in photonic crystal fibers by direct degenerate four-wave mixing. Nonlinear Guided Waves and Their Applications, pp. 1-3/NLTuD11, Optical Society of America, 2002.

Nikolov, N. I.; Bang, Ole; Christiansen, P.L.; Rasmussen, J.J. & Krolikowski, W.: Soliton interaction in weakly nonlocal nonlinear media. Nonlinear Guided Waves and Their Applications, pp. 1-3/NLTuD43, Optical Society of America, 2002.

Bendsøe, M. P. & Sigmund, O.: Material models in topology optimisation. Lecture notes, Advanced School and Workshop on Bone Mechanics - Mathematical and Mechanical Models for Analysis and Synthesis, 30 pp., Instituto Superior Tecnico, Lisbon, Portugal, June 24-28 2002.

Kawamoto, A., Bendsøe, M. P. & Sigmund, O.: Articulated Mechanism Design by an Enumeration Approach. Proc. 15th Nordic Seminar on Computational Mechanics (E. Lund, N. Olhoff, J. Stegmann, eds.) 17-19 October, 2002, Aalborg, Denmark. AAU, Denmark, pp. 59-62.

Bendsøe, M.P.: See Sigmund O.; Jensen, J.S.

Berggreen, C. & Simonsen, B.C.: The effect of Curvature on the Strength of Laterally Loaded Sandwich Panels, Proceeding of The Eighth International Symposium on Practical Design of Ships and Other Floating Structures (PRADS), 16-21 September 2001, Shanghai, China, pp. 1323-1329.

Berggreen, C. & Simonsen, B.C.: Weight Reduction in Sandwich Structures by use of Curved Panels, Proceedings of The Eighth International Symposium on Practical Design of Ships and Other Floating Structures, 16-21 September 2001, Shanghai, China, p.1323-1329.

Bingham, H.B.: A Fourier-Boussinesq method for short-wave coastal problems. Abstract in Fall Meeting, American Geophysical Union, San Francisco, CA, USA, Dec. 2002.

Bingham, H. B.: See Madsen, P.A.

Bjørnø, L., Bradley, D.L., Culver, R.L. & Di, X.: Acoustics of surface ship wakes. Proceedings 25th Scandinavian Symposium on Physical Acoustics, Scientific/Technical Report No. 420130, Department of Telecommunications, Norwegian University of Science and Technology, Trondheim, June 2002, 1 - 7.

Bredmose, H., Agnon, Y., Schäffer, H. & Madsen, P. A.: Fully dispersive evolution equations: Wave breaking and efficiency. Proc. Int. Conf. in Coastal Eng., Cardiff, Wales, July 2002.

Anh, N. D. & Bræstrup, M. W. (eds): International Conference on Concrete in Marine Environments, Vietnam National Center for Natural Science and Technology, Hanoi, 10 October 2002, 304 pp.

Clausen, H.B., Lützen, M., Friis-Hansen, A. & Bjørneboe, N.: Bayesian and Neural Networks for Preliminary Ship Design, The Eighth International Symposium On Practical Design of Ships and Other Floating Structures, Shanghai, China, September 2001.

Christiansen, P.L.: See Bang, O.

Damkilde, L. & Grønne, M.: An improved triangular element with drilling rotations. In Proceedings of 15th Nordic Seminar on Computational mechanics. pp. 4, 2002.

Krabbenhoft, K., Damkilde, L. & Krabbenhoft, S.: Ultimate limit state design of sheet pile walls by finite elements and nonlinear programming. In Proceedings of 3rd International Conference on Engineering Computational Technology, Prague, September 2002, "Finite Elements: Techniques and Developments", p.18.

Hansen, H.-J., Thygesen, U., Kristensen, A. & Damkilde, L.: Structural analysis of offshore structures exposed to blast loads. In Proceedings of 15th Nordic Seminar on Computational mechanics. pp. 4, 2002.

Hvejsel, B., Langmack, L.N., Kristensen, A. & Damkilde, L.: Prediction of limit rotational speeds in a high-speed tool based on FE computed J-integral intensities. In Proceedings of 15<sup>th</sup> Nordic Seminar on Computational mechanics, pp. 4, 2002.

Krabbenhoft, K., Hoffmeyer, P., Bechgaard, C. & Damkilde, L.: Finite element analysis of boron diffusion in wood. In Proceedings of 15th Nordic Seminar on Computational mechanics, pp. 4, 2002.

Ditlevsen, O. D. & Madsen, H. O.: Structural Reliability Methods. Edition 2.1: Internet edition downloadable from <http://www.mek.dtu.dk/staff/od/books.htm> (First edition: Wiley & Sons, Chichester, UK, 1996), 2002.

Franchin, P., Ditlevsen, O. D. & Der Kiurehian, A.: Integrals of random fields treated by the model correction factor method. ICOSSAR'01, Newport Beach, CA, USA, June 2001. In Corotis, R.B., Schuëller, G.I. and Shinozuka, M. (editors), Structural Safety and Reliability, CDROM, Swets & Zeitlinger, Lisse, 2002.

Friss-Hansen, P., Simonsen, B.C.: Integrated Software for Risk Analysis of Shipping, Proceedings of the 2<sup>nd</sup> International Conference on Collision and Grounding of Ships, ICCGS, Copenhagen, July 2001, pp. 1-12.

Carlsen, R.A. & Friss-Hansen, P.: Risk Evaluation Of Deferred Production, ESREL 2001, Torino, Italy, September 16-20, 2001, Paper no. 52.

Friis-Hansen, P. & Sørensen, J. D.: Reliability-based code calibration of partial safety factors. In: M.H. Faber(ed.), Joint Committee of Structural Safety. JCCS-Workshop on Code calibration, Zurich, Switzerland, April 2002.

Fynbo, J., Rasmussen, J. & Olhoff, N.: A Cubist Topology Optimisation Method. In: Proc. 15th Nordic Seminar on Computational Mechanics, eds. E. Lund, N. Olhoff and J. Stegmann, October 18-19, 2002, Aalborg, Denmark. Institute of Mechanical Engineering, Aalborg University, Denmark, ISBN 87-89206-67-3, pp. 223-226, 2002.

Gaunaa, M. & Sørensen, J. N.: Experimental Investigation of Airfoil Subject to Harmonic Translatory Motions. AIAA-2002-0035.

Goltermann, P.: SMART STRUCTURES: Monitoring of Concrete Structures. pp.143-145, Proc. XVII Nordic Concrete Research Symposium, 12-14 June 2002, Helsingør, Denmark.

Goltermann, P., Jensen, F. & Andersen, M.E.: Smart Structures: Possibilities, experiences and benefits from permanent monitoring. IABMAS 02, July 2002, Barcelona, Spain.

Klinghoffer, O., Goltermann, P. & Bässler, R.: Smart Structures: Embeddable sensors for use in the integrated monitoring systems of concrete structures. IABMAS 02, July 2002, Barcelona, Spain.

Pardi, L., Mercalli, A. & Goltermann, P.: SMART STRUCTURES: per una migliore gestione dei ponti. Proc. Giornata di Studi La valutazione del Degrado dei Ponti ed I Sistemi di Gestione in Europe, 30 September 2002, Messina, Italy.

Mietz, J., Raupach, M. & Goltermann, P.: Integrated monitoring system for reinforced concrete structures. Proc. 1<sup>st</sup> FIUP Congress "Concrete structures in the 21<sup>st</sup> century", 13-19 October, 2002, Osaka, Japan.

Hansen, J.M.: See Pedersen, S. L.



Hansen, L.V.: Constant Frequency Condition of Fiber Lasers in Strain. In: Lund, E., Olhoff, N., Stegmann, J. (eds), Proceedings of 15th Nordic Seminar on Computational Mechanics, Aalborg, Denmark, October, pp. 185-188, 2002

Jacobsen, T. K., Andersen, L. F., Sørensen, B. F., Jensen, H. M. & Hansen, P. F.: Brudmekanisk karakterisering og design af limsamlinger. Dansk Metallurgisk Selskabs Vintermøde, 61-73, (Eds. P. Brøndsted & M. Somers), ISBN 87-97535-31-9, 2002.

Jensen, J. S., Sigmund, O., Thomsen, J. J. & Bendsøe, M. P.: Design of multi-phase structures with optimized vibrational and wave-transmitting properties. In Proceedings of the 15th Nordic seminar on Computational Mechanics, 63-66, Aalborg, Denmark, E. Lund, N. Olhoff and J. Stegmann (eds.), Institute of Mechanical Engineering, Aalborg University, 2002.

Jensen, J.S.: See Sigmund, O.

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Jensen, J.J.: Load and Global Response of Ships, Elsevier Ocean Engineering Book Series, Vol. 4, 337 Pages, August 2001.

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Jensen, J. J. & Folsø, R.: Hydroelastic Vibrations of Ships. In: Pensa, C. (Ed.) Proceedings of the HSMV 2002 Conference, Naples, September 2002, pp II.17-II.24, ATENA.

Jensen, J. J., Törnquist, R. & Nielsen, W. P. E.: Fatigue Damage Predictions in Aluminium Constructions. In: A.F. Blom (Ed.) Proceedings of the 8th Int. Fatigue Congress, Stockholm, June 2002, Emas, UK, pp 3253-3260.

Krenk, S.: Damping mechanisms and models in structural dynamics. Structural Dynamics, EUROODYN2002, Eds. Grundmann and Schueller, Balkema, Lisse, 2002, pp. 87-98.

Rüdinger, F. & Krenk, S.: Non-linear stochastic oscillator models of vortex-induced vibrations. In Corotis, R.B., Schuëller, G.I. and Shinozuka, M. (editors), Structural Safety and Reliability, paper no. 452, 2002, Balkema, Rotterdam.

Rüsgård, Hans Ulrik & Larsen, Poul S.: Water pumping and analysis of flow in burrowing zoobenthos - a short overview. BioFlow, First workshop, 10-14 Sept. 2002 at NIOO-CEMO, Yerseke, The Netherlands. pp.1-15.

Larsen, P.S.: See Ullum, T.; Meyer, K. E.

Legarth, B.N., Tvergaard, V. & Kuroda, M.: Crack-tip blunting in an anisotropic material with plastic spin. WCCM V, Fifth World Congr. Comput. Mech. (eds. H.A. Mang et al.), ISBN 3-9501554-0-6, on Web, 9 p., 2002.

Lützen, M. & Rusås, S.: Derivation of Probability Distributions for Collision Energy for use within a Harmonized Probabilistic Damage Stability Framework, 2<sup>nd</sup> International Conference on Collision and Grounding of Ships, Copenhagen, Denmark, July 2001.

Tagg, R., Bartzis, P., Papanikolaou, A., Spyrou, K. & Lützen, M.: Updated Vertical Extent of Collision Damage, 2<sup>nd</sup> International Conference on Collision and Grounding of Ships, Copenhagen, Denmark, July 2001.

Lützen, M. & Pedersen, P.T.: Design Against Minor Impacts, The Eighth International Symposium On Practical Design of Ships and Other Floating Structures, Shanghai, China, September 2001.

Lützen, M.: Investigations and Proposed Formulations for the factor “p”, “r” and “v”. IMO, SUB-COMMITTEE ON STABILITY AND LOAD LINES ON FISHING VESSELS SAFETY, 45th Session, July 2002, Item 3, No. 5, SLF45/3/5.

Lützen, M.: See Clausen, H. B.

Madsen, P. A., Bingham, H. & Wang, B.: Velocity formulations and mild-slope approximations in the framework of Boussinesq theory. Proc. Int. Conf. in Coastal Eng., Cardiff, Wales, July 2002.

Madsen, P. A.: See Bredmose, H.

Mayer, S.: See Nielsen, K.B.

Meyer, K. E., Özcan, O., Larsen, P. S., Gjelstrup, P. & Westergaard, C.: Point and planar LIF for velocity-concentration correlations in a jet in cross flow. Laser Techniques for Fluid Mechanics: selected papers from the 10<sup>th</sup> International Symposium on Applications of Laser Techniques to Fluid Mechanics. Lisbon, Portugal, 10-13 July 2000. Editors R. J. Adrian et al., Springer, 2002.

Meyer, Knud Erik, Larsen, Poul S., Westergaard, Carsten H. & Guillard, Fabrice: Temperature and velocity fields in natural convection by PIV and LIF, 11<sup>th</sup> Intl. Symposium on Applications of Laser Techniques to Fluid Mechanics, Lisbon, Portugal 8-11 July 2002 (abstract published. Paper published on CD-rom, pp.1-8).

Mikkelsen, R. F. & Sørensen, J. N.: Modelling of Wind Tunnel Blocage. Proc. CD-ROM Global Windpower Conference & Exhibition, [www.ewea.org](http://www.ewea.org), Paris, April 2002, 5 pages.

Mikkelsen, R. F. & Sørensen, J. N.: Modelling of Wind Tunnel Blocage. S.-T. Thor (ed.), 15<sup>th</sup> IEA Symposium on the Aerodynamics of wind Turbines, Athens. Swedish Defence Research Agency, FOI-S-0224-SE, pp. 41-52, 2002.

Mikkelsen, R. F.: See Shen, W. Z.

Nielsen, K.B. & Mayer, S.: VOF simulation of green water load problems, Proceedings of 4th Numerical Towing Tank Conference, 23-25 September, Hamburg, Germany.

Niordson, C. F.: Nonlocal plasticity effects on fracture toughness. In: Khan, K. S. and Lopez-Pamies, O. (eds.). Proceedings of Plasticity '02: Plasticity, Damage and Fracture at Micro and Nano Scales, Aruba, January 3-9 2002, Fulton, Maryland, USA, Neat Press, pp. 591-593.

Nygaard, J. & Pyrz, R.: Carbon nanotube reinforced microcellular polycarbonate, Proceedings ACUN-4 Conference on Composite Systems: Macrocomposites, Microcomposites, Nanocomposites, S. Bandyopadhyay et.al (eds.), University of New South Wales, 2002, pp. 345-350.

Nygaard, J. & Pyrz, R.: Analysis of volumetric data from X-ray microtomography with application to foams, Proceedings. "Mesomechanics 2002 on New Challenges in Mesomechanics", R. Pyrz et. al (eds.), Aalborg University, 2002, pp. 549-556.

Olhoff, N. & Seyranian, A.P.: Initial Post-buckling Behaviour of Bimodal Optimal Columns. In: CD-Proc. 1st Int. Congress on Mechatronics, eds. A. Guran and H. Bremer, July 3-6, 2002, Linz, Austria. Johannes Kepler University, Linz, Austria, 4 pp., 2002.

Olhoff, N. & Seyranian, A.P.: On the Bifurcation and Initial Post-buckling Behaviour of Bimodal Optimal Columns. In: Proc. 15th Nordic Seminar on Computational Mechanics, eds. E. Lund, N. Olhoff and J. Stegmann, October 18-19, 2002, Aalborg, Denmark. Institute of Mechanical Engineering, Aalborg University, Denmark, ISBN 87-89206-67-3, pp. 249-252, 2002.

Kharmanda, G. & Olhoff, N.: Reliability-based Topology Optimization as a New Strategy to Generate Different Structural Topologies. In: Proc. 15th Nordic Seminar on Computational Mechanics, eds. E. Lund, N. Olhoff and J. Stegmann, October 18-19, 2002, Aalborg, Denmark. Institute of Mechanical Engineering, Aalborg University, Denmark, ISBN 87-89206-67-3, pp. 211-214, 2002.

Olhoff, O.: See Fynbo, J.

Pedersen, C. B. W.: Revisiting Topology Optimization of Continuum Structures with Elastoplastic Response. Proceedings of the 15th Nordic Seminar on Computational Mechanics, October 18-19, 2002, Aalborg, Denmark, Editors: Lund, E., Stegmann J., and Olhoff N. Publisher: Institute of Mechanical Engineering, Aalborg University, Denmark, 2002.

Pedersen, C. B. W.: Topology Optimization of Energy Absorbing Frames. Proceedings of the Fifth World Congress on Computational Mechanics (WCCM V), July 7-12, 2002, Vienna, Austria, Editors: Mang, H.A., Rammerstorfer, F.G. and Eberhardsteiner, J., Publisher: Vienna University of Technology, Austria, 2002.

Pedersen, C. B. W.: Topology Optimization for Crashworthiness of Frame Structures. ICrash 2002, 3rd International Crashworthiness Conference, Society of Automotive Engineering, Melbourne, Victoria, Australia, 2002.

Pedersen, N.L.: On design of probes for biological sensing. Proceedings of the 15th Nordic Seminar on Computational Mechanics, (NSCM-15), Aalborg, 67-70, 2002.

Pedersen, P.: Sensitivity Analysis for Dynamics Stability Problems. A. P. Seyranian and I. Elishakoff (eds.). Modern Problems of Structural Stability CISM, Italy Springer, Courses and Lectures, Number 436, pages 285-340, 2002.

Pedersen, P.: On Design for Uniform Energy Density of Non-isotropic Continua. E. Lund, N. Olhoff and J. Stegmann, 15<sup>th</sup> Nordic Seminar on Computational Mechanics, 2002, pp. 71-74.

Otto, S., Pedersen, P.T., Samuelidis, M. & Sames, P.: Elements of Risk Analysis for Collision and Grounding of a RoRo Passenger Ferry, Proceedings 2<sup>nd</sup> Int. Conference on Collision and Grounding of Ships, pp 303 - 310, 2001, Copenhagen, Denmark.

Pedersen, P. T.: See Lützen, M.

Pedersen S. L., Hansen J. M. & Ambrosio, J. A. C.: A Novel Roller-Chain Drive Model Using Multibody Dynamics Analysis Tools . Virtual Nonlinear Multibody Dynamic Systems, NATO Advanced Study Institute, Prague, Czech Republic, June 23 - July 3 2002.

Pyrz, R.: Wavelets a new method for analysis of microstructure of composite materials, Proceedings 5<sup>th</sup> DURACOSYS Int. Conference, ed. H. Fukuda, Balkema 2002, pp. 117-120.

Pyrz, R.: Identification of clustered distributions of inclusions in composite materials, Proceedings ACUN-4 Conference on Composite Systems: Macrocomposites, Microcomposites, Nanocomposites, S. Bandyopadhyay et.al (eds.), University of New South Wales, 2002, pp.132-137.

Pyrz, R.: Bridging the length-scale gap: short fibre composite material as an example, Proceedings International Symposium of Multiscalling in Mechanics, G.C. Sih, C.P. Spyropoulos (eds.), 2002, National Technical University of Athens, pp. 247-254.

Bochenek, B. & Pyrz, R.: Reconstruction methodology for planar and spatial random microstructures, Proceedings. "Mesomechanics 2002 on New Challenges in Mesomechanics", R. Pyrz et. al (eds.), Aalborg University, 2002, pp. 565-572.

Pyrz, R.: See Schjødt-Thomsen, J.; Nygaard, J.; Thomsen, T.; Rauhe, J.C.

Rasmussen, J.: See Fynbo, J.

Rauhe, J.C., Pyrz, R.: generation of 3D finite element mesh of foam using X-ray microtomographic data, Proc. 15<sup>th</sup> Nordic Seminar on Computational Mechanics, N. Olhoff & E. Lund (eds.), Aalborg University, 18-19 October, 2002, pp. 159-162.

Ravn, E.S., Urban, J. & Simonsen, B.C.: Damage and Loss of Stability for HSC in Grounding or Collision Accidents, proceedings of HIPER 2001, Hamburg, May 2001, 15 pages.

Redanz, Pia: Deformation induced anisotropy in powder compaction at high relative densities. In: Khan, A.S. and Lopez-Pamies, O. (eds.) Proceedings of Plasticity '02: Plasticity, Damage and Fracture at Macro, Micro and Nano Scales, Aruba, January 3-9, Fulton, Maryland, USA, Neat Press, pp. 522-524, 2002.

Richelsen, Ann Bettina & van der Giessen, Erik: The influence of grain shape on surface roughening in sheet drawing. In: Khan, A.S. and Lopez-Pamies, O. (eds.) Plasticity, Damage and Fracture at Macro, Micro and Nano Scales, Proceedings of Plasticity'02: The Ninth International Symposium on Plasticity and Its Current Applications, Aruba, January 3-9, Neat Press, Fulton, Maryland, USA 2002, pp. 257-259.

Kjeldsen, T. R. & Rosbjerg, D.: Assessment of water resources system sustainability. Proceedings of ICWREER 2002, Dresden, Germany. In: Smidtz, G.H. (ed.) Water Resources and Environment Research Volume I - Modeling water resources phenomena & Water resources management, 514-517.

Eskilsson, C. G., Arnason, J. I. & Rosbjerg, D.: Simulation of the jökulhlaup on Skeidarársandur. Iceland, in November 1996 using MIKE 21 HD. In: Snorrason, A., Finnsdóttir, H.P. & Moss, M.E. (eds.), The Extremes of the Extremes: Extraordinary Floods. Proceedings of an International Symposium, Reykjavik, Iceland, July 2000. International Association of Hydrological Sciences, Oxfordshire, UK. IAHS Publication 271, 37-43.

Souza, A. & Santos, I.: Modeling and Experimental Tests of a Mechatronic Device to Measure Road Profiles Considering Impact Dynamics. São Paulo, Brazil, 24-26 November 2002, Society of Automotive Engineers, pp. 1-8, PAPER 2002-01-3474 (in Portuguese).

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Shen, W. Z., Mikkelsen, R. F., Sørensen, J. N. & Bak, C.: Evaluation of TIP Correction Theories. In: S. E. Thor (ed.), 15<sup>th</sup> IEA Symposium on the Aerodynamics of Wind Turbines, Athens, 2002. Swedish Defence Research Agency, FOI-S-0224-SE, pp. 107-112.

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Shen, W. Z., Mikkelsen, R. F., Sørensen, J. N. & Bak, C.: Evaluation of the Prandtl Tip Correction for Wind Turbine Computations. Proc. CD-ROM Global Windpower Conference & Exhibition, [www.ewea.org](http://www.ewea.org), Paris, April 2002, 5 pages.

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## 5. LIST OF DCAMM REPORTS INDICATING FINAL REFERENCE

- 1 - 612: Ask for separate book.
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626. NIORDSON, CHRISTIAN F.: Analysis of Steady-State Ductile Crack Growth along a Laser Weld (November 1999)
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633. BRUNS, TYLER E. & TORTORELLI, DANIEL: Topology Optimization of Nonlinear Elastic Structures and Compliant Mechanism (March 2000)
634. KRENK, STEEN: Unified Formulation of Radiation Conditions for the Wave Equation (April 2000)
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637. RÜDINGER, FINN & KRENK, STEEN: Non-parametric System Identification from Non-linear Stochastic Response (June 2000)
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656. NEVES, M.M., SIGMUND, O. & BENDSØE, M.P.: Topology Optimization of Periodic Microstructures with a Penalization of Highly Localized Buckling Modes (March 2001)
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660. THOMSEN, J.J.: Some General Effects of Strong High-Frequency Excitation: Stiffening, Biasing, and Smoothing (June 2001). *J. of Sound and Vibration*, to appear.
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665. THOMSEN, JON JUEL: Theories and Experiments on the Stiffening Effect of High-Frequency Excitation for Continuous Elastic Systems (October 2001)
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668. LEGARTH, BRIAN NYVANG, TVERGAARD, VIGGO & KURODA, MITSUTOSHI: Effects of Plastic Anisotropy on Crack-Tip Behavior (January 2002)
669. PEDERSEN, PAULI: Design Study of Hole Positions and Hole Shapes for Crack Tip Stress Releasing (January 2002)
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672. PEDERSEN, NIELS L.: On Optimization of Bioprobes (June 2002)
673. NIORDSON, CHRISTIAN F.: Strain Gradient Plasticity Effects in Whisker-Reinforced Metals (July 2002)
674. RASHID, M.M. & TVERGAARD, V.: On the Path of a Crack near a Graded Interface under Large Scale Yielding (September 2002)
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4 March 2002.

(Institute of Mechanics, Moscow State Lomonosov University, Russia)

Soto, Ciro A.: The Automobile A Structural Viewpoint.

18 March 2002.

(Ford Research Labs, Dearborn, USA)

Kirillov, Oleg N.: Collapse of Keldysh Chains and Sensitivity Analysis of Continuous Nonconservative Systems.

22 March 2002.

(Institute of Mechanics, Moscow State Lomonosov University, Russia)

Kocvara, Michal: Modelling Delamination: Hemivariational Inequality, Nonsmooth or just Smooth Optimization?

22 April 2002.

(Institute of Applied Mathematics, University of Erlangen/Nuremberg, Germany)

Kim, Kyung-Suk: Scale-bridging in Dislocation-based Multi-scale Modeling.

30 April 2002.

(Professor of Engineering, Brown University, Providence, RI, USA)

Peterka, Frantisek: Vibro-impact Systems.

3 June 2002.

(Inst. of Thermomechanics, Academy of Sciences of the Czech Republic, Prague, Czech Republic)

Gautesen, A.K.: On How a Rayleigh Wave Turns a Corner.

27 June 2002.

(Department of Mathematics and Ames Laboratory, Iowa State University, USA)

Ring, W.: The Level Set Method for Shape Optimization.

28 October 2002.

(Institute of Mathematics, University of Graz, Austria)

Fleck, N.A.: Microarchitected Porous Metals.

14 November 2002.

(Professor at Cambridge University Engineering Department, UK)

Thouless, M.D.: Cohesive-zone Modeling of Adhesive Joints.

26 November 2002.

(Professor at Department of Mechanical Engineering and Department of Materials Science & Engineering, University of Michigan, Ann Arbor, USA)

## 9. DCAMM INTERNATIONAL SYMPOSIUM

A DCAMM International Symposium on

### CHALLENGES in APPLIED MECHANICS

was held over the three days July 25<sup>th</sup> to July 27<sup>th</sup> at Hotel Frederiksdal here in Kgs. Lyngby. Combined with the symposium the participants gathered in the event of Frithiof Niordson's 80<sup>th</sup> birthday. Financial support of the Symposium received from the Mønsted Foundation and from DTU is gratefully acknowledged.

There were 60 participants; of these participants 33 were from 15 different foreign countries.

Nine sessions with the session's titles:

- Fluid – Solid Mechanics
- Fracture, Cracks and Contact
- Material Mechanics of Composites
- Laminates and Delaminations
- Length Scales in Plasticity
- Biomechanics and Waves
- Large and Small
- Structural and Material Optimization
- Non-linear Dynamics and Multibody Systems

included in all 26 lectures. In addition a poster-session was held. A Frithiof Niordson volume with proceedings from the Symposium is printed. Copies of this book of 274 pages is available from the DCAMM secretariat at the price of 40 \$ or €.



Group picture taken before the Symposium dinner  
on Friday 26th July 2002

## APPENDIX

### Abbreviations:

from Technical University of Denmark

IMM:	Dept. of Informatics and Mathematical Modelling
MAT:	Department of Mathematics
MEK-ET:	Dept. of Mechanical Engineering, Fluid Mechanics and Energy Engng.
MEK-FAM:	Dept. of Mechanical Engineering, Solid Mechanics
MEK-K&P:	Dept. of Mechanical Engineering, Engineering Design
MEK-MT:	Dept. of Mechanical Engineering, Maritime Engineering
MEK-VB:	Dept. of Mechanical Engineering, Coastal and River Eng.

from Aalborg University

IFB-AAU:	Building Technology and Structural Engineering
IME-AAU:	Institute of Mechanical Engineering

Albertsen, Niels Chr.	(IMM)	Associate Professor, Ph.D.
Ammitzbøll, Jeppe	(MAT)	Ph.D. student
Andersen, Poul	(MEK-MT)	Associate Professor, Ph.D.
Andreasen, Jens H.	(IME-AAU)	Associate Professor, Ph.D.
Back-Pedersen, Andreas		Elected member, Ph.D.
Bang, Ole	(IMM)	Assistant Professor
Bendsøe, Martin P.	(MAT)	Professor, dr.techn.
Berggren, Carl Christian	(MEK-MT)	Ph.D. student
Bingham, Harry	(IMM)	Associate Professor
Bisgaard, Anders	(MAT)	Ph.D. student
Bjørnø, Leif		Elected member, Professor
Boudant, Pauline	(MEK-MT)	Ph.D. student
Bozhevolnaya, Elena	(IME-AAU)	Assistant Professor, Ph.D.
Bredmose, Henrik	(IMM)	Ph.D. student
Brink-Kjær, Ole	(MAT)	Professor, Ph.D.
Brohus, Henrik	(IFB-AAU)	Associate Professor, Ph.D.
Bruns, Tyler E.	(MEK-FAM)	Assistant Professor, Ph.D.
Bræstrup, M.W.		Elected member, Ph.D.
Brøns, Morten	(MAT)	Associate Professor, Ph.D.
Buhl, Thomas	(MEK-FAM)	Ph.D.
Byskov, E.	(IFB-AAU)	Professor, dr.techn.
Cederkvist, Jan		Elected member, Ph.D.
Christensen, Ole	(MAT)	Associate Professor, Ph.D.
Christensen, Søren T.	(IME-AAU)	Assistant Professor, Ph.D.
Christiansen, Edmund		Elected member, dr.scient.
Christiansen, Peter L.	(IMM)	Professor, dr.techn.
Christiansen, Søren	(IMM)	Associate Professor, Ph.D.

The degree of Ph.D.: After the five year engineering education, this degree can be obtained by a three year study, including courses and a thesis.

Christoffersen, Jes	(MEK-FAM)	Emeritus Assoc. Prof., Ph.D.
Cifuentes, Gustavo C.	(IFB-AAU)	Ph.D. student
Cour, Dorthe D. de la	(MEK-FAM)	Ph.D. student
Damkilde, Lars		Elected Member, Prof., Ph.D.
Damsgaard, Michael	(IME-AAU)	Assistant Professor, Ph.D.
Deigaard, Rolf	(MEK-VB)	Professor, Ph.D.
Deriabine, Mikhael	(MAT)	Assistant Professor, Ph.D.
Dietz, Jesper	(MEK-MT)	Ph.D. student
Ditlevsen, Ove	(MEK-MT)	Professor, dr.techn.
Du, Jianbin	(IME-AAU)	Assistant Professor, Ph.D.
Fenger, N.P.		Elected member, Ph.D.
Frier, Christian	(IFB-AAU)	Assistant Professor, Ph.D.
Fuhrman, David	(MEK-MT)	Ph.D. student
Fynbo, Jens	(IME-AAU)	Ph.D. student
Gaunaa, Mac	(MEK-ET)	Ph.D. student
Goltermann, Per		Elected member, Ph.D.
Gravesen, Jens	(MAT)	Associate Professor, Dr.phil.
Groos, Jesper	(IMM)	Ph.D student
Gunneskov, Ole		Elected member, Ph.D.
Hammer, Velaja B.		Elected member, Ph.D.
Hansen, John M.	(MEK-FAM)	Associate Professor, Ph.D.
Hansen, Martin O.L.	(MEK-ET)	Associate Professor, Ph.D.
Hansen, Michael R.	(IME-AAU)	Associate Professor, Ph.D.
Hansen, Morten Hartvig		Elected member, Ph.D.
Hansen, Lars Pilegaard	(IFB-AAU)	Professor, Ph.D.
Hansen, Per Chr.	(IMM)	Professor, dr.techn.
Hansen, Per Skafte	(IMM)	Associate Professor
Hansen, Peter Friis	(MEK-MT)	Associate Professor, Ph.D.
Hansen, Vagn Lundsgaard	(MAT)	Professor, Ph.D.
Hjorth, Poul	(MAT)	Associate Professor, Ph.D.
Hjort, Søren	(MEK-ET)	Ph.D. student
Hougaard, Peter		Elected member, Ph.D.
Høgsberg, Jan	(MEK-MT)	Ph.D. student
Jacobsen, Michael	(IMM)	Ph.D. student
Jensen, Henrik Myhre	(MEK-FAM)	Associate Professor, dr. techn.
Jensen, Jakob S.	(MEK-FAM)	Assistant Professor, Ph.D.
Jensen, Jarl	(MEK-FAM)	Associate Professor
Jensen, Jørgen Juncher	(MEK-MT)	Professor, dr.techn.
Jensen, Lars R.	(IME-AAU)	Ph.D. student
Jensen, Torben Klint	(MAT)	Ph.D. student
Johansen, Steffen Kjær	(IMM)	Ph.D. student
Kepler, Jørgen A.	(IME-AAU)	Assistant Professor, Ph.D.
Kildegaard, Arne	(IME-AAU)	Professor, lic.techn.
Kliem, Wolfhard	(MAT)	Associate Professor
Knudsen, Thomas S.		Elected member, Ph.D.
Kokkendorff, Simon Lyngby	(MAT)	Ph.D. student
Krenk, Steen	(MEK-MT)	Professor, dr. techn.
Lade, Poul V.		Elected member, Professor
Larsen, Jesper		Elected member, Ph.D.
Larsen, Mikael	(IME-AAU)	Associate Professor, Ph.D.

Larsen, Peter V.	(IMM)	Ph.D. student
Larsen, P. Scheel	(MEK-ET)	Professor, Ph.D.
Legarth, Brian N.	(MEK-FAM)	Ph.D. student
Lind-Nielsen, Birger		Elected member, Ph.D.
Lund, Erik	(IME-AAU)	Associate Professor, Ph.D.
Lyckegaard, Anders	(IME-AAU)	Ph.D. student
Lützen, Marie	(MEK-MT)	Assistant Professor, Ph.D.
Madsen, Kaj	(IMM)	Professor, dr.techn.
Madsen, Per	(MEK-MT)	Professor, dr.techn.
Markvorsen, Steen	(MAT)	Professor, Ph.D.
Mayer, Stefan	(IMM)	Assistant Professor, Ph.D.
Melnik, Roderick V.N.		Elected member, Professor
Meyer, Knud Erik	(MEK-ET)	Associate Professor, Ph.D.
Michelsen, Jess	(MEK-ET)	Associate Professor
Mikkelsen, Lars P.		Elected member, Ph.D.
Mikkelsen, Robert	(MEK-ET)	Ph.D. student
Mohr, Gunnar	(MAT)	Professor
Mouritsen, Ole Ø.	(IME-AAU)	Associate Professor, cand. polyt.
Møller, Henrik	(IME-AAU)	Assistant Professor, Ph.D.
Mørch, K.A.		Elected member, Ph.D.
Nielsen, Arne Gudmann	(MEK-FAM)	Associate Professor
Nielsen, H. Bruun	(IMM)	Associate Professor, Ph.D.
Nielsen, Jacob	(IFB-AAU)	Associate Professor, Ph.D.
Nielsen, Kristian Bendix	(MEK-MT)	Ph.D. student
Nielsen, Leif Otto		Elected, Asso. Prof. Ph.D.
Nielsen, N.-J. Rishøj		Elected member, Ph.D.
Nielsen, Peter V.	(IFB-AAU)	Professor, Ph.D.
Nielsen, Søren R.K.		Elected member, Prof., dr.techn.
Nielsen, Ulrik D.	(MEK-MT)	Ph.D. student
Niordson, Christian	(MEK-FAM)	Assistant Professor, Ph.D.
Niordson, Frithiof I.	(MEK-FAM)	Emeritus Professor, Ph.D.
Nygaard, Jens V.	(IME-AAU)	Ph.D. student
Olhoff, Niels	(IME-AAU)	Professor, dr.techn.
Olsen, Anders Smærup	(MEK-MT)	Assistant Professor, Ph.D.
Ottosen, Niels Saabye		Elected member, Professor
Pedersen, Claus B.W.	(MEK-FAM)	Ph.D.
Pedersen, Jacob M.	(MEK-ET)	Ph.D. student
Pedersen, Michael	(MAT)	Associate Professor, Ph.D.
Pedersen, Niels L.	(IME-AAU)	Associate Professor, Ph.D.
Pedersen, Ole Bøcker		Elected member, dr.techn.
Pedersen, Pauli	(MEK-FAM)	Professor, dr.techn., HD
Pedersen, P. Terndrup	(MEK-MT)	Professor, Ph.D.
Pedersen, Sine L.	(MEK-FAM)	Ph.D. student
Pedersen, Thomas Ørts		Elected member, Ph.D.
Perram, John W.		Elected member, Professor
Perunovic, Jelena	(MEK-MT)	Ph.D. student
Petersen, Thomas		Elected member, Ph.D.
Pommer, Christian	(MAT)	Professor
Poulsen, Thomas Agersten	(MEK-FAM)	Ph.D.
Pyrz, Ryszard W.	(IME-AAU)	Professor, dr.techn.



Rasmussen, Jeppe F.	(MEK-MT)	Ph.D. student
Rasmussen, John	(IME-AAU)	Associate Professor, Ph.D.
Rathkjen, Arne	(IFB-AAU)	Associate Professor, Ph.D.
Rauhe, Jens Chr.	(IME-AAU)	Ph.D. student
Ravn, Erik S.	(MEK-MT)	Ph.D. student
Ravn-Jensen, Kim		Elected member, Ph.D.
Reck, Mads	(MEK-ET)	Assistant Professor
Redanz, Pia	(MEK-FAM)	Associate Professor, Ph.D.
Richelsen, Ann Bettina	(MEK-FAM)	Associate Professor, Ph.D.
Rosbjerg, Dan		Elected, Reader, dr.techn.
Røgen, Peter	(MAT)	Assistant Professor, Ph.D.
Santos, Ilmar Ferreira	(MEK-K&P)	Associate Professor
Schjødt-Thomsen, Jan	(IME-AAU)	Assistant Professor, Ph.D.
Shen, Wen Zhong	(MEK-ET)	Associate Professor
Sigmund, Ole	(MEK-FAM)	Professor, dr.techn.
Simonsen, Bo Cerup	(MEK-MT)	Associate Professor, Ph.D.
Skovgaard, Ove	(MAT)	Professor, Ph.D.
Sorokin, Sergey	(IME-AAU)	Professor, Ph.D.
Stang, Henrik		Elected, Asso. Prof. Ph.D.
Stegmann, Jan	(IME-AAU)	Ph.D. student
Sterndorff, Martin J.		Elected member, Ph.D.
Stoustrup, Jakob		Elected member, Professor
Sumer, B. Mutlu	(MEK-VB)	Professor
Svensson, E.		Elected member, Ph.D.
Søndergaard, Jacob	(IMM)	Ph.D. student
Søndergaard, Peter	(MAT)	Ph.D. student
Sørensen, Dan N.	(MEK-ET)	Associate Professor, Ph.D.
Sørensen, Jens Nørkær	(MEK-ET)	Professor, Ph.D.
Sørensen, John D.	(IFB-AAU)	Associate Professor, Ph.D.
Sørensen, Mads P.	(IMM)	Associate Professor
Sørensen, Niels Jakob		Elected member, Ph.D.
Thoft-Christensen, Palle	(IFB-AAU)	Professor, dr.techn.
Thomsen, Jon Juel	(MEK-FAM)	Associate Professor, Ph.D.
Thomsen, Ole Thybo	(IME-AAU)	Professor, Ph.D.
Thomsen, P. Grove	(IMM)	Professor
Thomsen, Thomas	(IME-AAU)	Ph.D. student
True, Hans	(IMM)	Associate Professor, Ph.D.
Tvergaard, Viggo	(MEK-FAM)	Professor, dr.techn.
Törnqvist, Rikard	(MEK-MT)	Ph.D. student
Ullum, Thorvald	(MEK-ET)	Ph.D. student
Valsgaard, Poul	(IME-AAU)	Ph.D. student
Widell, K.E.		Elected member, Professor
Wolff, Stefan	(MAT)	Ph.D. student
Zee, Mark de	(IME-AAU)	Assistant Professor, Ph.D.