DANISH CENTER FOR APPLIED MATHEMATICS AND MECHANICS

ANNUAL REPORT 2015

DCAMM

TECHNICAL UNIVERSITY OF DENMARK -
AALBORG UNIVERSITY - AARHUS UNIVERSITY –
UNIVERSITY OF SOUTHERN DENMARK

DANISH CENTER FOR APPLIED MATHEMATICS AND MECHANICS

Scientific Council as of January 2016

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Erik Lund	Dept. of Mechanical Engineering, AAU
Lars Pilgaard Mikkelsen	DTU Wind Energy
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FOREWORD

This annual report about the year 2015 contains information on publications, seminars and guests. For the first time the annual report will primarily be made available electronically, however a limited amount will be printed and is available on request. The purpose of the report is still to serve as a reference and documentation for accomplished activities. The detailed information is available on our homepage www.dcamm.dk and on the homepages of the cooperating departments.

In 2015 a total of 21 DCAMM seminars were given, this is an exceptional high number of seminars. The number of participants in the seminars where also high indicating the importance of these events. A total of 12 courses were given in the auspices of DCAMM. The annual speaker seminar was this year given by Professor Julia R. Greer from California Institute of Technology under the title "Materials by Design: 3-Dimensional Architected Nanostructured Meta-Materials". The lecture was given at DTU and AAU. All details are available at the DCAMM homepage.

As of January 1st 2016, the departments cooperating in DCAMM are:

from the **Technical University of Denmark**:
DTU Civil Engineering
DTU Compute
DTU Mechanical Engineering
DTU Wind Energy

from **Aalborg University**:
Department of Civil Engineering
Department of Mechanical and Manufacturing Engineering

from **Aarhus University**
Department of Engineering

from **University of Southern Denmark**
Department of Mathematics and Computer Science
Department of Technology and Innovation

I thank all the members of DCAMM and our international contacts for their support and inspiration, and I look forward to our future continued collaboration.

Niels Leergaard Pedersen

CONTENTS

1. MEMBERS 2015

57 professors
208 scientific members
132 PhD students
} at the nine cooperating departments at the Center

27 elected members
8 foreign members

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

2. FOREIGN MEMBERS

Professor G.I. Barenblatt
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USA

Professor Michael S. Longuet-Higgins
Department of Applied Mathematics and Theoretical Physics
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Professor S. Nemat-Nasser
The UCSD Jacobs School of Engineering
Center of Excellence for Advanced Materials
4209 Engineering Building I
9500 Gilman Drive
La Jolla, CA 92093
USA

Professor Bertil Storåkers
Kungliga Tekniska Högskolan
S-100 44 Stockholm 9500
Sweden

3. GUESTS FOR EXTENDED PERIODS IN 2015
(more than a fortnight)

Guest professors & post docs:

Barari, Amin, Aalborg University, 1.8.15 – 30.9.15

Bayraktar, Deniz, Istanbul Technical University, Turkey, 20.4.15 -

Carlsson, Leif A., Florida Atlantic University, USA, 1.5.15 – 31.5.15

Gaididei, Yuri, Kiev, Ukraine, 1.2.15-31.3.15 & 1.9.15 – 31.10.15

Kim, Rae Young, KAIST, Korea, 20.7.15 – 31.8.15

Ma, Pengyu, Chang'an University, China, 1.12.2015 -

Martins, Paolo, Univ. of Lissabon, Portugal, 1.4.15 – 15.6.15

Pedersen, Claus B.W., 3D Software Company (3ds), 24.8. – 18.9 & 19.10. – 30.10.15

Stoeva, Diana, Univ. of Wien, Austria, 1.2.15 – 29.2.15

Stoppelkamp, Nick, 3D Software Company (3ds), Germany, 12.6.15 – 10.7.15 & 16.11.15 – 18.12.15

Valkeapää, Antti, Laboratory of Machine Design, Finland, 4.5.15 – 31.8.15

PhD students

Borges de Oliveira, Fabricio, PTB, Germany, 3.4.15 – 3.5.15 & 15.9.15 – 13.11.15

D'Angelo, Luca, University of Milano-Bicocca, Italy, 13.1.15 – 29.6.15

Desideri, Adriano, Université de Liège, Belgium, 1.5.15 – 30.9.15 & 19.10.15 – 6.11.15

Dong, Haowen, Beijing Jiaotong University, China, 15.4.15 – 15.7.15

Gouin, Maite, Ecole Centrale de Nantes, France, 17.8.15 – 6.9.15

Haminudin, Nor Faizah, Tech. University of Malacca, Malaysia, 1.10.15 -

Joshi, Yogendra, University of Warwick, UK, 15.9.15 – 31.10.15

Katsakouli, Christina, University of Patras, Greece, 16.2.15 – 13.5.15

Lu, Hongya, Qinghua University, Beijing, China, 26.2.15 – 1.10.15

Mirsadraee, Yasaman, MAN Diesel & Turbo, 1.3.15 -

Oyarzua, Elton, Universidad de Concepcion, Chile, 16.3.15 – 13.5.15

Patil, Navin, University of Calabria, India, 1.2.15 – 31.7.15

Rosso, Catalina F., Nat. Universiy of Central Buenos Aires, Argentina, 1.9.15 – 28.11.15

Sajjadnejad, Mohammad, Amirkabir University of Technology, Iran, 9.2.15 – 8.8.15

Winklmaier, Martin, Technical University, Münich, Germany, 21.2.15 – 7.3.15

Yaacob, Mohd Rusdy, Tech. University of Malacca, Malaysia, 1.6.15 –

Zhang, Zhuo, Beijing University of Technology, China, 1.10.15 -

4 . PUBLICATIONS IN 2015

4A. INTERNATIONAL JOURNALS WITH PEER REVIEW

A

Adesokan, B. J.; Evgrafov, A.; Sørensen, M. P.
Simulating cyclic voltammetry under advection for electrochemical cantilevers. Mathematical Methods in the Applied Sciences, (2015), 38(16), 3384-3391.

Adesokan, B. J.; Quan, X.; Evgrafov, A.; Heiskanen, A.; Boisen, A.
Hydrodynamics studies of cyclic voltammetry for electrochemical micro biosensors. Journal of Physics: Conference Series (Online), (2015), 574.

Aggerbeck, M.; Herbreteau, A.; Rombouts, M.; Verwimp, J.; Ambat, R.
Alkaline corrosion properties of laser-clad aluminum/titanium coatings. Anti-Corrosion Methods and Materials (2015), 62(1), 37-47.

Alexandersen, J.; Lazarov, B.S.
Topology optimisation of manufacturable microstructural details without length scale separation using a spectral coarse basis preconditioner. Computer Methods in Applied Mechanics and Engineering, (2015), 290, 156-182.

de Leon, D.M; Alexandersen, J.; Jun, J.S.; Sigmund, O.
Stress-constrained topology optimization for compliant mechanism design. Structural and Multidisciplinary Optimization, (2015), 52(5), 929-943.

Bayat, M.; Ghorasi, S. S.; Amani, J.; Andersen, L. V.; Ibsen, L. B.; Rabczuk, T.; Talebi, H.
Recovery-based error estimation in the dynamic analysis of offshore wind turbine monopile foundations. Computers and Geotechnics, (2015), 70(October), 24-40.

Damgaard, M.; Andersen, L. V.; Ibsen, L. B.
Assessment of dynamic sunstructuring of a wind turbine foundation applicable for aeroelastic simulations. Wind Energy, (2015), 18(8), 1387-1401.

Damgaard, M.; Andersen, L. V.; Ibsen, L. B.
Dynamic response sensivity of an offshore wind turbine for varying subsoil conditions. Ocean Engineering, (2015), 101, 227-334.

Damgaard, M.; Andersen, L. V.; Ibsen, L. B.; Toft, H. S.; Sørensen, J. D.
A probabilistic analysis of the dynamic response of monopile foundations: Soil variability and its consequences. Probabilistic Engineering Mechanics, (2015), 41, 46-59.

Madsen, S.; Pinna, R.; Randolph, M. F.; Andersen, L. V.
Buckling of Monopod Bucket Foundations – Influence of Boundary Conditions and Soil-structure Interaction. Wind and Structures, (2015), 21(6), 641-656.

Vahdatirad, M.; Bayat, M.; Andersen, L. V.; Ibsen, L. B.
Probabilistic finite element stiffness of a laterally loaded monopole based on an improved asymptotic sampling method. Journal of Civil Engineering and Management, (2015), 21(4), 503-513.

Yi, J-H.; Kim, S-B.; Yoon, G-L.; Andersen, L. V.
Natural frequency of bottom-fixed offshore wind turbines considering pile-soil-interaction with material uncertainties and scouring depth. Wind and Structures, An International Journal, (2015), 21(6), 625-639.

Benoit, D.L.; Damsgaard, M.; Andersen, M.S.
Surface marker cluster translation, rotation, scaling and deformation: Their contribution to soft tissue artefact and impact on knee joint kinematics. Journal of Biomechanics, (2015), 48(10), 2124-2129.

Farahani, S.D.; Andersen, M.S., de Zee, M.; Rasmussen, J.
Human arm posture prediction in response to isometric endpoint forces. Journal of Biomechanics, (2015), 48(15), 4178-4184.

Farahani, S.D.; Andersen, M.S.; de Zee, M.; Rasmussen, J.
Optimization-based dynamic prediction of kinematic and kinetic patterns for a human vertical jump from a squatting position. Multibody System Dynamics, (2015), 36(1), 37-65.

Farahini, S.D.; Bertucci, W.; Andersen, M.S.; de Zee, M.; Rasmussen, J.
Prediction of crank torque and pedal angle profiles during pedaling movements by biomechanical optimization. Structural and Multidisciplinay Optimization, (2015), 51(1), 251-266.

Mellon, S.; Grammatopoulos, G.; Andersen, M.S.; Pandit, H.; Gill, H.; Murray, D.
Optimal acetabular component orientation estimated using edge-loading and impingement risk in patients with metal-on-metal hip resurfacing arthroplasty. Journal of Biomechanics, (2015), 48(2), 318-323.

Shin, K.W.; Andersen, P.
CFD analysis of cloud cavitation on three tip-modified propellers with systematically varied tip geometry. Journal of Physics: Conference Series, (2015), 656(5).

Baran, I.; Jakobsen, J.; Andreasen, J.H.; Akkerman, R.
Investigation of the Residual Stress State in an Epoxy Based Speciment. Key Engineering Materials, (2015), 651-653, 375-380.

Jakobsen, J.; Andreasen, J.H.; Jensen, M.
A novel biaxial specimen for inducing residual stresses in thermoset polymers and fibre composite material. Journal of Composite Materials, (2015), 49(22), 2723-2731.

Andreassen, E.; Manktelow, K.; Ruzzene, M.
Directional bending wave propagation in periodically perforated plates. Journal of Sound and Vibration. (2015), 335, 187–203

Andreassen, E.; Manktelow, K.; Ruzzene, M.
A practical multiscale approach for optimization of structural damping. Structural and Multidisciplinary Optimization, (2015), 53(2), 215-224

Andreasen, J. G.; Larsen, U.; Knudsen, T.; Haglind, F.
Design and optimization of a novel organic Rankine cycle with improved boiling process. Energy, (2015), 91, 48-59

Andresen, G. B.; Søndergaard, A. A.; Greiner, M.
Validation of Danish wind time series from a new global renewable energy atalas for energy system analysis. Energy, (2015), 93(1), 1074-1088.

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Power flow tracing in a simplified renewable European electricity network. New Journal of Physics, (2015), 17.

Arora, V.
Direct structural dampingidentification method using complex FRFs. Journal of Sound and Vibration, (2015), 339, 304-323.

B

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Coupler-curve synthesis of four-bar linkages via a novel formulation. Mechanism and Machine Theory, (2015), 94, 177-187.

Bai, S.; Angeles, J.
Synthesis of RCCC linkages to visit four given poses. Journal of Mechanisms and Robotics, (2015), 7(3).

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A new approach to design of a lightweight anthropomorphic arm for service appications. Journal of Mechanisms and Robotics, (2015), 7(3).

Zhou, L.; Bai, S.; Andersen, M.S.; Rasmussen, J.
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A Simulation Method for High-Cycle Fatigue-Driven Delamination using a Cohesive Zone Model. International Journal for Numerical Methods in Engineering, (2015).

Balci, A.; Andersen, M.; Thompson, M. C.; Brøns, M.
Codimension of three bifurcation of streamline patterns close to a no-slip wall: A topological description of boundary layer eruption. Physics of Fluids, (2015), 27(5).

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Comparing the performance of biomedical clustering methods. Nature Methods, (2015), 12(11), 1033-1038.

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Improving resistance welding of aluminum sheets by addition of metal powder.Institution of Mechanical Engineers. Proceedings. Part L. Journal of Materials: Design and Applications, (2015), 229(6), 493-502.

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The structure of dual Grassmann codes. Designs, Codes and Cryptography, (2015), 20.

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Formulation and validation of a two-dimensional steady-state model of desiccant wheels. Science and Technology for the Built Environment, (2015), 21(3), 300-311.

Dimitrov, N.K.; Berggreen, C.
Probabilistic fatigue life of balsa cored sandwich composites subjected to transverse shear. Journal of Sandwich Structures & Materials, (2015), 17(5), 562-577.

Dimitrov, N.K.; Kiureghian, A.D.; Berggreen, C.
Bayesian inference model for fatigue life of laminated composites. Journal of Composite Materials, (2015), 50(2), 131-143.

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Hydrodynamic analysis of oscillating water column wave energy devices. Journal of Ocean Engineering and Marine Energy, (2015), 1(4), 405-419.

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Characterization methods of nano-patterned surfaces generated by induction heating assisted injection molding. International Journal of Automation Technology, (2015), 9(4), 349-355.

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Real time power consumption monitoring for energy efficiency analysis in micro EDM milling. International Journal of Advanced Manufacturing Technology, (2015), 78(9), 1511-1521.

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Accuracy of an efficient framework for structural analysis of wind turbine blades. Wind Energy, (2015).

Borg, M.; Collu, M.
Frequency-domain characteristics of aerodynamic loads of offshore floating vertical axis wind turbines. Applied Energy, (2015), 155, 629-636.

Bottoli, F.; Winther, G.; Christiansen, T.L.; Somers, M.A.J.
Influence of Plastic Deformation on Low-Temperature Surface Hardening of Austenitic Stainless Steel by Gaseous Nitriding. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, (2015), 46A(6), 2579-2590.

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Influence of Microstructure and Process Conditions on Simultaneous Low-Temperature Surface Hardening and Bulk Precipitation Hardening of Nanoflex®. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, (2015), 46A (11), 5201-5216.

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Deformations of constant mean curvature surfaces preserving symmetries and the Hopf differential. Annali della Scuola Normale Superiore di Pisa – Classe di Scienze, (2015), XIV(2), 645-675.

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Constant Gaussian curvature surfaces in the 3-sphere via loop groups. Pacific Journal of Mathematics, (2014), 269(2), 281-303.

Brandt, A.; Sturesson, P-O.; Ristinmaa, M.
Test Analysis Verification Uding Open Software. Sound and Vibration, (2014), 13-16.

Passon, P.; Branner, K.
Condensation of long-term wave climates for the fatigue design of hydrodynamically sensitive offshore wind turbine support structures. Ships and Offshore Structures, (2015), 11(2), 142-166.

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Non-linear ultimate strength and stability limit state analysis of a wind turbine blade. Wind Energy, (2015).

Bredmose, H.; Bullock, G.N.; Hogg, A.J.
Violent breaking wave impacts. Part 3. Effects of scale and aeration. Journal of Fluid Mechanics, (2015), 765, 82-113.

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Mixed-Mode Oscillations Due to a Singular Hopf Bifurcation in a Forest Pest Model. Mathematical Population Studies, (2015), 39, 71-79.

Brøns, M.; Thompson, M. C.; Leweke, T.; Hourigan, K.
Vorticity generation and conservation fro two-dimensional interfaces and boundaries. Journal of Fluid Mechanis, (2014), 758, 63-93.

Benoît, E.; Brøns, M.; Desroches, M.; Krupa, M.
Extending the zero-derivative principle for slow-fast dynamical systems. Zeitschrift fuer Angewandte Mathematik und Physik, (2015), 66(5), 2255-2270.

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Predicting optimal back-shock times in ultrafiltration hollow fiber modules II: Effect of inlet flow and concentration dependent viscosity. Journal of Membrane Science, (2015), 493, 486-495.

Budzik, M. K.; Jensen, H. M.; Jumel, J.
Fracture in the single cantilever beam test with large scale bridging. Key Engineering Materials, (2015), 627, 221-224.

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Møberg, A.; Budzik, M. K.; Jensen, H. M.
Intersection of Interface Crack Front with Free Edge. Key Engineering Materials, (2015), 627, 225-228.

Possart, W.; Jumel, J.; Budzik, M. K.; Guitard, J.; Shanahan, M. E. R.
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C

Calaon, M.; Madsen, M.H.; Weirich, J.; Hansen, H.N.; Tosello, G.; Hansen, P.E., Garnaes, J.; Tang, P.T.
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On R-Duals and the Duality Principle in Gabor Analysis. Journal of Fourier Analysis and Applications, (2015), 21(2), 383-400.

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Numerical modelling of damage evolution in ingot forging. Key Engineering Materials, (2015), 651-653, 237-242

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On the determination of stress profiles in expanded austenite by grazing incidence X-ray diffraction and successive layer removal. Acta Materialia, (2015), 94, 271-280.

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Topology optimization of coated structures and material interface problems. Computer Methods in Applied Mechanics and Engineering, (2015), 290, 524-541.

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Robust and efficient handling of yield surface discontinuities in elasto-plastic finit element calculations. Engineering Computations, (2015), 32(6), 1722-1752.

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Cellwise conservative unsplit advection for the volume of fluid method. Journal of Computational Physics, (2015), 283, 582–608.

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5. LIST OF DCAMM S-REPORTS (from no. S85)

S1 – S107: Ask for separate book.

S108. JONCQUEZ, SOIZIC ANNICK GABRIELLE: Second-order Forces and Moments acting on Ships in Wawes (August 2009)

S109. DÜHRING, MARIA BAYARD: Optimization of acoustic, optical and optoelastic devices (July 2009)

S110. NIELSEN, KIM LAU: Modelling of damage development and ductile failure in welded joints (December 2009)

S111. ESTUPINAN, EDGAR ALBERTO: Feasibility of Applying Controllable Lubrication Techniques to Reciprocating Machines (December 2009)

S112. BANG-MØLLER, CHRISTIAN: Design and Optimization of an Integrted Biomass Gasification and Solid Oxide Fuel Cell System (April 2010)

S113. PEDERSEN, RUNE: Dynamic Modeling of wind Rubine Gearboxes and Experimental Validation (April 2010)

S114 BRIX, WIEBKE: Modelling refrigerant distribution in minichannel evaporators (May 2010)

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S116. CIPOLLA, LEONARDO: Conversion of MX Nitrides to Modified Z-Phase in 9-12%Cr Ferritic Steels (March 2010)

S117. HAIDER, SAJJAD: Two Stroke diesel Engines for Large Ship Propulsion (January 2011).

S118. VELTE, CLARA: Simultation and control of Wind Turbine Flows using Vortex Generators (February 2009)

S119. ENZ, STEPHANIE: Factors Affecting Coriolis Flowmeter Accuracy, Precision, and Robustness (September 2010)

S120. KJÆRSGAARD-RASMUSSEN, JIMMY: Inside-out electrical capacitance tomography for downhole multiphase flow evaluation (April 2010)

S121. LAJIC, ZORAN: Fault-Tolerant Onboard monitoring and Decision Support Systems (October 2010)

S122. SVENDSEN, MARTIN NYMANN: Wind Turbine Rotors with Active Vibration Control (January 2011)

S123 CLAUSEN, LASSE RØNGAARD: Design of novel DME/methanol synthesis plants based on gasification of biomass (February 2011)

S124 SHIN, KEUN WOO: Cavitation simulation on marine propellser (November 2010)

S125 HAUGAARD, ASGER MARTIN: On Controllable Elastohydrodynamic Fluid Film Bearings (May 2010)

S126 PEDERSEN, TROELS DYHR: Homogeneous Charge Compression Ignition Combustion of Dimethyl Ether (May 2011)

S127 GARCÌA, NÈSTOR RAMOS: Quasi-3d aerodynamic code for analysing dynamic flap response (April 2011)

S128 ZAMBRANO, HARVEY A: Molecular Dynamics Studies of Nanofluidic Devices (May 2011)

S129 AAGE, NIELS: Topology optimization of radio frequency and microwave structures (April 2011)

S130 MATZEN, RENÉ: Topology Optimization for Transient Wave Propagatio Problems (March 2011)

S131 ANDREASEN, CASPER SCHOUSBOE: Multiscale topology optimization of solid and fluid structures (May 2011)

S132 KÆRN, MARTIN RYHL: Analysis of flow maldistribution in fin-and-tube evaporators for residential air-conditioning systems (August 2011)

S133 BEHRENS, TIM: Simulation of Moving Tailing edge Flaps on a Wind Turbine Blade using a Nivier-Stokes based Immersed Boundary Method (July 2011)

S134 BLASQUES, JOSÉ PEDRO ALBERGARIA AMARAL: Optimal Design of Laminated Composite Beams (August 2011)

S135 AZIZI, REZA: Multi-scale modelling of composites (September 2011)

S136 JACOBSEN, NIELS GJØL: A Full Hydro- and Morphodynamic Description of Breaker Bar Development (April 2011)

S137 MOROSI, STEFANO: From Hybrid to Actively-Controlled Gas Lubricated Bearings – Theory and Experiemt (September 2011)

S138 KÆRGAARD, KASPER: Numerical Modeling of Shoreline Undulations (September 2011)

S139 BHOWMIK, SUBRATA: Modelling and Control of Magnetorheological Damper: Real-time implementation and experimental verification (October 2011)

S140 ANDKJÆR, JACOB: Wave Manipulation by Topology Optimization (January 2012)

S141 MOSLEMIAN, RAMIN: Residual Strength and Fatigue Lifetime of Debond Damaged Sandwich Structures (September 2011)

S142 HANSEN, SØREN VINTHER: Performance Monitoring of Ships (September 2011)

S143 HANSEN, NILAS MANDRUP: Interaction between Seabed Soil and Offshore Wind Turbine Foundations (March 2012)

S144 THOMSEN, KIM: Modeling of dynamically loaded hydrodynamic bearings at low Sommerfeld numbers (March 2012)

S145 WANG, FENGWEN: Systematic Design of Slow Light Waveguides (August 2012)

S146 RASMUSSEN, JOHANNES TOPHØJ: Particle Methods in Bluff Body Aerodynamics (October 2011)

S147 ANDERSEN, SØREN BØGH: Design and Optimization of Gearless Drives using Multi-Physics Approach (September 2012)

S148 LAHRIRI, SAID: On the Rotor to Stator Contact Dynamics with Impacts and Friction – Theoretical and Experimental Study (November 2012)

S149 VARELA, ALEJANDRO CERDA: Mechatronics Applied to Fluid Film Bearings: Towards More Efficient Machinery (December 2012)

S150. SCHLECHTINGEN, MEIK: A Global Condition Monitoring System for Wind Turbines (February 2013)

S151. SENG, SOPHEAK: Slamming and Whipping Analysis of Ships (December 2012)

S152: HOSSEINZADEH, ELHAM: Fuel Cell Hydrogen manifold for Lift Trucks (December 2012)

S153: DIMITROV, NIKOLAY: Structural Reliability of wind Turbine Blades: Design Methods and Evaluation (February 2013)

S154: RABBANI, ABID: Dynamic Performance of a PEM Fuel Cell System (March 2013)

S155: LINDBERG, OLE: Multiscale Simulation of Breaking Wave Impacts (March 2012)

S156: NIELSEN, MARTIN BJERRE: Dynamics of Rigid Bodies and Flexible Beam Structures (September 2013)

S157: JENSEN, MICHAEL V.: Heat Transfer in Large Two-Stroke Marine Diesel Engines (August 2012)

S158: TORRY-SMITH, JONAS MØRKEBERG: Designing Mechatronic Products – Achieving Integration by Means of Modelling Dependencies (February 2013)

S159: POULIOS, KONSTANTINOS: Tribology of A Combined Yaw Bearing and Brake for Wind Turbines (September 2013)

S160: JØRGENSEN, MARTIN FELIX: Aerodynamic and Mechanical System Modelling (November 2013)

S161: ROTHUIZEN, ERASMUS DAMGAARD: Hydrogen Fuelling Stations – A Thermodynamic Analysis of Fuelling Hydrogen Vehicles for Personal Transportation (September 2013)

S162: WÖRÖSCH, MICHAEL: End-to-end requirements management for multiprojects in the construction industry (February 2014)

S163: BUREAU, EMIL: Experimental Bifurcation Analysis Using contro-Based continuation (January 2014)

S164: VAJARI, DANIEL ASHOURI: Micromechanical failure in fiber-reinforced composites (March 2014)

S165: JOHANSEN, AXEL OHRT: Numerical study of evaporators in power plants for improved dynamic flexibility (March 2013)

S166: ANDERSEN, INGRID MARIE VINCENT: Full Scale Measurements of the Hydro-Elastic Response of Large Container Ships for Decision Support (April 2014)

S167: GIVERSEN, SØREN: Blast Testing and Modelling of composite Structures (March 2014)

S168: SAREMI, SINA: Density-Driven Currents and Deposition of Fine Materials (April 2014)

S169: CERULLO, MICHELE: Computational stress and damage modelling for rolling contact fatigue (September 2014)

S170: NGUYEN, TUONG-VAN: Modelling, analysis and optimization of energy systems on offshore platforms (October 2014)

S171: AMINI AFSHAR, MOSTAFA: Towards Predicting the Added Resistance of Slow Ships in Waves (October 2014)

S172: ANDREASSEN, ERIK: Optimal Design of Porous Materials (January 2015)

S173: JOHANSEN, VILLADS EGEDE: Structural colours and applications to anodized aluminium surfaces (November 2014)

S174: BRUUN, HANS PETER LOMHOLT: PLM support to architecture based development – Contribution to computer-supported architecture modelling (January 2015)

S175: FUGLEDE, NIELS: Kinematics and Dynamics of Roller Chain Drives (July 2014)

S176: LARSEN, ULRIK: Design and modelling of innovative machinery systems for large ships (October 2014)

S177: LARSEN, JON STEFFEN: Nonlinear Analysis of Rotors Supported by Air Foil Journal Bearings – Theory & Experiments (February 2015)

S178: INGVORSEN, KRISTIAN MARK: Investigations of the turbulent swirling flow in a two-stroke marine diesel engine (November 2013)

S179: ERIKSEN, RASMUS NORMANN: High Strain Rate characterization of Composite materials (March 2014)

S180: PEDERSEN, BENJAMIN PJEDSTED: Data-driven Vessel Performance Monitoring (June 2014)

S181: JANAKIRAMAN, SHRAVAN: Fatigue and Wer in Rolling and Sliding Contacts (November 2014)

S182: CHRISTIANSEN, NIELS HØRBYE: Hybrid Method Simulation of Slender Marine Structures (August 2014)

S183: PIEROBON, LEONARDO: Novel design methods and control strategies for oil and gas offshore power systems (October 2014)

S184: DOU, SUGUANG: Gradient-based optimization in nonlinear structura dynamics (April 2015)

S185: CORDTZ, RASMUS FAURSKOV: The Influence of Fuel Sulfur on the Operation of Large Two-Stroke Marine Diesel Engines (January 2014)

S186: JEPSEN, ALLAN DAM: ARCHITECTURE DESCRIPTIONS – A contribution to Modeling of Production System Architecture (September 2014)

S187: OMMEN, TORBEN SCHMIDT: Heat Pumps in CHP Systems. High-efficienty Energy System Utilising Combined Heat and Power and Heat Pumps (April 2015)

S188: MODI, ANISH: Numerical evaluation of the Kalina cycle for concentrating solar power plants (August 2015)

S189: ENEMARK, SØREN: Integration of shape Memory Alloys into Low-Damped Rotor-Bearing Systems – Modelling, Uncertainties and Experimental Validation (October 2015)

S190: WRONSKI, JORRIT: Design and Modelling of Small Scale Low Temperature Power Cycles (May 2015)

S191: ANDERSEN, FREDERIK HERLAND: Integrated Analysis of the Scavenging Process in Marine Two-Stroke Diesel Engines (August 2015)

S192: GUOLAUGSSON, TÓMAS VIGNIR: Modelling architectures in multi-product oriented technology development (July 2015)

S193: CHRISTIANSEN, CHRISTIAN KIM: Diesel Engine Tribology (December 2015)

S194: COSTACHE, ANDREI: Anchoring FRP Composite Armor in Flexible Offshore Riser Systems (October 2015)

6. OTHER THESES

ADESOKAN, BOLAJI JAMES: “Numerical Modeling of Microelectrochemical Systems”, DTU Compute: Department of Applied Mathematics and Computer Science, 2015, PhD Thesis.

BAK, BRIAN LAU VERNDAL: “Progressiv Damage Simulation of Laminates in Wind Turbine Blades under Quasistatic and Cyclic Loading”, Aalborg University, Department of Mechanical and Manufacturing Engineering, 2015, PhD Thesis.

BAKKEDAL, MORTEN: “Thermodynamics of the hexagonal close-packed iron-nitrogen system from first-principles”, DTU Mechanical Engineering, 2015, PhD Thesis.

BRINK, BASTIAN: “Synthesis and characterization of homogeneous interstitial solutions of nitrogen and carbon in ironbased lattices”, DTU Mechanical Engineering, 2015, PhD Thesis.

BALCI, ADNAN: “Topological Fluid Dynamics for Free and Viscous Surfaces”, DTU Compute: Department of Applied Mathematics and Computer Science, 2015, PhD Thesis.

CASPERSEN, MICHAEL: “High-efficiency, low-cost, durable electrodes for hydrogen production in advanced alkaline water electrolysis, DTU Mechanical Engineering, 2015, PhD Thesis.

COX, RIMANTE: “Climate Change and Its Impact on the Operation and Maintenance of Buildings”, DTU Civil Engineering, 2015, PhD Thesis.

CUSTER, ROCCO: “Development of a natural hazard risk model framework with application to flood risk”, DTU Civil Engineering, 2015, PhD Thesis.

DA SILVA, NUNO: “Human health, comfort and performance in relaxation to building certification schemes (Development of human performance index for use in the building certification schemes)”, DTU Civil Engineering, 2015, PhD Thesis.

DI MUOIO, GIOVANNI: “Drying of water based foundry coating: Innovative test, process design and optimization methods”, DTU Mechanical Engineering, 2015, PhD Thesis.

DIN, RAMEEZ UD: “Steam Initiated Surface Modification of Aluminum Alloys”, DTU Mechanical Engineering, 2015, PhD Thesis.

EGELUND, SUNE DAASKOV: “Development of low-cost heterogeneous electrocatalysts for large scale advanced alkaline electrolysers – with focus on oxygen evolution and system performance”, DTU Mechanical Engineering, 2015, PhD Thesis.

FENG, HUAN: “Mesoscale Modeling of Aphalt”, DTU Civil Engineering, 2015, PhD Thesis.

GUDLA, VISWESWARA CHAKRAVARTHY: “Optically Designed Anodised Aluminum Surface, Microstructural and Electrochemical Aspects”, Mechanial Engineering, 2015, PhD Thesis.

HULIN, THOMAS: “Advanced Sandwich Elements for Sustainable Buildings - Integrated Structural and Materials Modelling”, DTU Civil Engineering, 2015, PhD Thesis.

HODICKY, KAMIL: “Analysis and Development of Advanced Sandwich Elements for Sustainable Buildings”, DTU Civil Engineering, 2015, PhD Thesis.

KIAMEHR, SAEED: “Material solutions to Mitigate the Alkali Chloride-Induced High Temperature Corrosion”, DTU Mechanical Engineering, 2015, PhD Thesis.

LOPEZ, ANGEL ALFONSO: “Thermal stability of warm-rolled tungsten”, DTU Mechanical Engineering, 2015, PhD Thesis.

MIKESKA, TOMAS: “Energy performance of ventilation, heating and cooling systems integrated in sandwich panel of high performance concrete”, DTU Civil Engineering, 2015, PhD Thesis.

MORSBØL, JONAS: “Wave Propagation in Pipe-like Structures” Aalborg University, Department of Mechanical and Manufacturing Engineering, 2015, PhD Thesis.

NIE, JINZHE: “Active Indoor air cleaning and heat recovery technology for energy saving of building ventilation”, DTU Civil Engineering, 2015, PhD Thesis.

NGUYEN, NHUT: “Good towers of function fields”, DTU Compute: Department of Applied Mathematics and Computer Science, 2015, PhD Thesis.

NIELSEN, R.B.: “Wave propagation in non-uniform waveguides”, Aalborg University, Department of Mechanical and Manufacturing Engineering, 2015, PhD Thesis.

OMIDVARNIA, FARZANEH: “Design for Micro Manufacturing”, DTU Mechanical Engineering, 2015, PhD Thesis.

PAEGLE, IEVA: “Structural design of Light Weight Composite Floor and Roof Panels”, DTU Civil Engineering, 2015, PhD Thesis.

ROGOWSKA, MAGDALENA: “Understanding of fatigue properties of flexible pipes materials used in oil and gas industry”, DTU Mechanical Engineering, 2015, PhD Thesis.

SMITH, KEVIN MICHAEL: “Model Predictive Control of a Decentrilized Unit for Indoor Climate, Energy Performance, and Continuous Commissioning”, DTU Civil Engineering, 2015, PhD Thesis.

SØRENSEN, MORTEN KANNE: “Reuse of resources and materials in the Greenlandic construction industry”, DTU Civil Engineering, 2015, PhD Thesis.

SØRENSEN, SØREN NØRGAARD: “Parameterization for Multi-material Topology Optimization of Compostie Structures”, Aalborg University, Department of Mechanical and Manufacturing Engineering, 2015, PhD Thesis.

TANG, TIAN: “Modeling of Soil-Structure-Water Interaction”, DTU Civil Engineering, 2015, PhD Thesis.

VERDINGOVAS, VADIMAS: “Climatic Reliability of Electronics: Early prediction and control of contamination and humidity effects”, DTU Mechanical Engineering, 2015, PhD Thesis.

ZHANG, ZILI: “Passive and Active Vibration Control of Renewable Energy Structures”, Aalborg University, Department of Civil Engineering, 2015, PhD Thesis.

ZIKE, SANITA: “Micro-Scale Experiments and Models for composite Materials with Materials Research”, DTU Wind Energy, 2015, PhD Thesis.

7. DCAMM SEMINARS GIVEN IN 2015

Professor Zi-Kui Liu: CALPHAD, Materials Design, and Materials Genome. 3 November 2015. Director of the NSF Center for Computational Materials Design (CCMD). Department of Materials Science and Engineering, Pennsylvania State University, USA.

Professor Daniel A. Tortorelli: Gradient Based Design Optimization under Uncertainty via Stochastic Expansion Methods. 22 October 2015. Dept. of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, USA.

Professor Yukitaka Murakami: Mechanism of Failure in Fatigue and Tribology from Viewpoint of Small Defects and Small Cracks. 5 October 2015. Kyushu University, Japan.

Professor José L. Escalona: Coupled vehicle/track dynamics with the Moving Modes Method. Aarhus University, Department of Engineering. 1 October 2015. Dept. of Mechanical and Manufacturing Engineering, University of Seville, Spain.

Associate Professor Dan Negrut: On the Use of Computer Modeling to Characterize the Dynamics of Large Particulate Systems. Aarhus University, Department of Engineering 23 September 2015.Department of Mechanical Engineering, University of Wisconsin-Madison, USA

Dr. Anton Tkachuk: Variational selective mass scaling methods for explicit dynamics. 16 September 2015. Institute for Structural Mechanics, University of Stuttgart, Germany.

Professor Anter El-Azab: Computational modelling of mesoscale dislocation patterning and plastic deformation of single crystals. 9 September 2015. School of Materials Engineering, Purdue University, West Lafayette, IN 47907, USA.

Avadh Saxena, Group Leader of the Condensed Matter and Complex Systems Group (T-4): Mesoscopic Modeling of Ferroic and Multiferroic Materials. 3 September 2015. Los Alamo National Lab., USA.

Professor Yean-Der Kuan: Design, Fabrication and System Integration of the Portable duel Cells. 27 August 2015. Dept. of Refrigeration, Air Conditioning and Energy Engineering, National Chin-Yi University of Technology, Taiwan.

Professor Fred van Keulen: Towards “ready-to-print” designs. 19 August 2015. Structural Optimization and Mechanics, TU Delft, Delft, The Netherlands.

Professor Jeffrey W. Kysar: Two-Dimensional Materials: Mechanical Stiffness, Strength and Reliability. 29 June 2015. Dept. of Mechanical Engineering, Columbia University, New York, USA.

PhD, PE Pawel B. Woelke: Practical Failure Modeling for Engineering Structures. 19 June 2015. Weidlinger Associatges Inc.; New York, USA.

Assistant Professor, PhD, Ismet Baran: Residual Stresses in Polymer Composites: Numerical Modelling of Process and Product Performance. 17 June 2015. University of Twente, Enschede, The Netherlands.

Professor Paulo Martins: Fracture Loci in Sheet Metal Forming. 16 June 2015. Instituto Superior Tecnico, University of Lisbon, Portugal.

Andrew Kraynik: The micromechanics of random open-cell foam: stiffness and quasi-static crushing. 3 June 2015. Sandia National Laboratories, USA (retired) and University of Erlangen-Nuremberg, Germany.

Associate Professor Lorenzo Bardella: Modelling the torsion of thin metal wires by distortion gradient plasticity. 26 May 2015. University of Brescia, Italy.

Professor K.C. Park: Virtual Testing of Hopkinson's heterogeneous Bars: Fondest Hope and Reality. 29 April 2015. University of Colorado, Boulder, USA.

Professor Martin E.R.: Shanahan: Wetting Phenomena: Competitive Effects of Surface Tension and Elasticity on Thin and/or Soft Solids. Aarhus University, Department of Engineering. 23 April 2015. Université de Bordeaux, France.

Directeur de Recherche CNRS Olivier Le Matre: Seminar on Modern Scientific Computing Trends. 26 February 2015.

Professor Alan Needleman: The Effect of Rate Dependence on Localization of Deformation and Failure in Progressively Softening Solids. 25 February 2015. Texas A&M University, USA.

Professor Luis Volnei Sudati Sagrilo: Efficient Methods for Fatigue Analysis of Marine Structures. 29 January 2015. Federal University of Rio de Janeiro, Brazil.

8. DCAMM COURSES GIVEN IN 2015

DTU Mechanical Engineering

Experimental fluid dynamics and data interpretation

High Performancce Computing: FORTRAN, Open MP and MPI

Advanced Engineering Thermodynamics

Topology Optimization – Theory, Methods and Applications

Electron Microscopy and Analysis for Materials Research

PhD course on application of x-ray diffraction in materials science

Micro Mechanical Systems Design and Manufacture (PhD summer school)

Nanotribology: Theory and applications

Measurement uncertainty estimation using statistical methods

DTU Compute

Advanced Numerical Methods for Differential Equations

Aalborg University's Doctoral School of Engineering and Science

PhD course on Fracture Mechanics for Laminated Composite Structures

University of Southern Denmark, Odense

Advanced Structural Dynamics, Modelling and Measurements – in cooperation with KTH and Aarhus University

APPENDIX: List of members 2015

Abbreviations:

from Technical University of Denmark

CIVIL: Dept. of Civil Engineering
COMPUTE: Dept. of Applied Mathematics and Computer Science
MEK-FAM: Dept. of Mechanical Engineering, Solid Mechanics
MEK-FVM: Dept. of Mechanical Engineering, Fluid Mechanics, Coastal and Maritime Engineering
MEK-K&P: Dept. of Mechanical Engineering, Engineering Design and Product Development
MEK-MPP: Dept. of Mechanical Engineering, Manufacturing Engineering
MEK-MTU: Dept. of Mechanical Engineering, Materials and Surface Engineering
MEK-TES: Dept. of Mechanical Engineering, Thermal Energy

WIND: DTU Wind Energy

from Aalborg University

CIVIL, AAU: Department of Civil Engineering
M-TECH, AAU: Department of Mechanical and Manufacturing Engineering

from Aarhus University

ENG, AU: Department of Engineering

from University of Southern Denmark

SDU-MAT: Dept. of Mathematics and Computer Science
SDU-ITI: Dept. of Technology and Innovation

Aage, Niels	(MEK-FAM)	Associate Professor
Adesokan, Bolaji James	(COMPUTE)	PhD student
Alexandersen, Joe	(MEK-FAM)	PhD student
Ambat, Rajan	(MEK-MTU)	Professor
Amini Afshar, Mostafa	(MEK-FVM)	Postdoc
Andersen, Frederik Herland	(MEK-FVM)	PhD student
Andersen, Jakob Axel Bejbro	(MEK-K&P)	Scientific Assistant
Andersen, Lars Vabbersgaard	(CIVIL, AAU)	Associate Professor, PhD
Andersen, Michael Skipper	(M-TECH, AAU)	Associate Professor
Andersen, Michael Styrk	(SDU-ITI)	PhD student
Andersen, Morten Thøtt	(CIVIL, AAU)	PhD student
Andersen, Poul	(MEK-FVM)	Associate Professor
Andersen, Søren Juhl	(WIND)	Postdoc
Andreasen, Casper Schousboe	(MEK-FAM)	Associate Professor
Andreasen, Jens H.	(M-TECH, AAU)	Associate Professor, PhD
Andreasen, Jesper Graa	(MEK-TES)	Scientific Assistant
Andreasen, Mogens Myrup	(MEK-K&P)	Professor Emeritus
Andreassen, Erik	(MEK-FAM)	Postdoc
Andresen, Gorm	(ENG, AU)	Postdoc

Andrillo, Tito	(MEK-MPP)	PhD student
Arora, Vikas	(SDU-ITI)	Associate Professor
Azizi, Reza		Elected member, PhD
Back-Pedersen, Andreas		Elected member, PhD.
Bai, Shaoping	(M-TECH, AAU)	Associate Professor
Bajric, Anela	(MEK-FAM)	PhD student
Bak, Brian Lau Verndal	(M-TECH, AAU)	Postdoc
Balci, Adnan	(COMPUTE)	PhD student
Balling, Ole	(ENG, AU)	Aff. Professor
Bang-Jensen, Jørgen	(SDU-MAT)	Professor
Barington, Alexander	(MEK-MTU)	PhD student
Barlas, Emre	(WIND)	PhD student
Barton, Janice	(M-TECH, AAU)	Professor
Basdasso, Enrico	(MEK-TES)	Scientific Assistant
Baumbach, Jan	(SDU-MAT)	Associate Professor
Bay, Niels	(MEK-MPP)	Professor
Beelen, Peter	(COMPUTE)	Associate Professor
Bellemo, Lorenzo	(MEK-TES)	Scientific Assistant
Bender, Jens Jakob	(M-TECH, AAU)	PhD student
Bendsøe, Martin		Elected member, Dean of Graduate Studies and International Affairs
Berggreen, Christian	(MEK-FAM)	Associate Professor
Biel, Anders	(WIND)	Postdoc
Bingham, Harry B.	(MEK-FVM)	Associate Professor
Biondani, Francesco G.	(MEK-MPP)	PhD student
Bisacco, Giuliano	(MEK-MPP)	Assistant Professor
Bitsche, Robert	(WIND)	Senior Researcher
Blasques, José Pedro	(WIND)	Postdoc
Boelskifte, Per	(MEK-K&P)	Professor
Bohr, Tomas		Elected member, Professor
Boorla, Srinvasa Murthy	(MEK-K&P)	PhD student
Bordo, Kirill V.	(MEK-MTU)	Researcher
Borg, Michael	(WIND)	Postdoc
Borg, Ulrik		Elected member, Senior Engineer
Borgaonkar, Shruti	(MEK-MTU)	Scientific Assistant
Bossolini, Elena	(COMPUTE)	PhD student
Bottoli, Federico	(MEK-MTU)	PhD student
Bræstrup, M. W.		Elected member, PhD.
Brander, David	(COMPUTE)	Associate Professor
Brandt, Anders	(SDU-ITI)	Associate Professor
Branner, Kim	(WIND)	Senior Researcher
Bräuner, Lars	(ENG, AU)	Associate Professor
Bredmose, Henrik	(WIND)	Associate Professor
Brilhuis-Meijer, Ellen	(MEK-K&P)	PhD student
Brink, Bastian	(MEK-MTU)	Postdoc
Brohus, Henrik	(CIVIL, AAU)	Associate Professor, PhD
Brøndsted, Povl	(WIND)	Professor
Brøns, Morten	(COMPUTE)	Professor, PhD
Budzik, Michal	(ENG, AU)	Assistant Professor
Buhl, Thomas	(WIND)	Head of Section
Calaon, Matteo	(MEK-MPP)	Postdoc
Carlsen, Henrik	(MEK-TES)	Professor, Head of Department
Carlsen, Martin	(COMPUTE)	PhD student
Carstensen, Stefan	(MEK-FVM)	Associate Professor
Castro, Miguel Nobre	(M-TECH, AAU)	PhD student
Castro Ardilla, Oscar Gerardo	(WIND)	PhD student
Cederkvist, Jan		Elected member, PhD.

Chapelle, Lucie	(WIND)	PhD student
Chen, Hao	(MEK-FVM)	PhD student
Chirandini, Marco	(SDU-MAT)	Associate Professor
Chivaee, Hamid Sarlak	(WIND)	Postdoc
Choobi, Mahsa Seyyedian	(MEK-MPP)	Postdoc
Christensen, Erik Damgaard	(MEK-FVM)	Professor, Head of Section
Christensen, Georg Kronborg	(MEK-K&P)	Associate Professor
Christensen, Ole	(COMPUTE)	Professor, dr.scient.
Christiansen, Esben Toke	(M-TECH, AAU)	PhD student
Christiansen, Jesper De Claville	(M-TECH, AAU)	Professor
Christiansen, Peter	(MEK-MPP)	Researcher
Christiansen, Ramus Ellebæk	(MEK-FAM)	PhD student
Christiansen, Rune Juul	(MEK-MTU)	PhD student
Christiansen, Thomas Lundin	(MEK-MTU)	Senior Scientist
Clausen, Anders	(MEK-FAM)	PhD student
Clausen, Johan Christian	(CIVIL, AAU)	Associate Professor
Clausen, Lasse Røngaard	(MEK-TES)	Assistant Professor
Comminal, Raphael	(MEK-MPP)	Postdoc
Conseil, Helene	(MEK-MTU)	PhD student
Cordtz, Rasmus	(MEK-FM)	Postdoc
Costache, Andrei	(MEK-FAM)	PhD student
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Das, Chitta Ranjan	(MEK-MTU)	Postdoc
Davidsdóttir, Svava	(MEK-MTU)	Postdoc
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Diederichs, Annika Martina	(MEK-MTU)	PhD student
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El-Naaman, Salim	(MEK-FAM)	PhD student
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Fasano, Andrea	(MEK-MPP)	PhD student
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Felter, Christian Lotz	(MEK-FAM)	Postdoc
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Pereira, Gilmar Ferreira	(WIND)	PhD student
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Saseendran, Vishnu	(MEK-FAM)	PhD student
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ISSN 0106-6366