Ole Sigmund - DTU Orbit (13/09/2018)
Sigmund, Ole
sigmund@mek.dtu.dk
Department of Mechanical Engineering - Professor
Solid Mechanics

Publications:

**A density-based topology optimization methodology for thermoelectric energy conversion problems**
Lundgaard, C. & Sigmund, O. 2018 In : Structural and Multidisciplinary Optimization. 57, 4, p. 1427-1442
Publication: Research - peer-review › Journal article – Annual report year: 2018

**A non-linear material interpolation for design of metallic nano-particles using topology optimization**
Publication: Research - peer-review › Journal article – Annual report year: 2018

**A "poor man's approach" to topology optimization of cooling channels based on a Darcy flow model**
Publication: Research - peer-review › Journal article – Annual report year: 2018

**Benchmarking five numerical simulation techniques for computing resonance wavelengths and quality factors in photonic crystal membrane line defect cavities**
Publication: Research - peer-review › Journal article – Annual report year: 2018

**Benchmarking state-of-the-art numerical simulation techniques for analyzing large photonic crystal membrane line defect cavities**
Publication: Research - peer-review › Article in proceedings – Annual report year: 2018

**Benchmarking state-of-the-art optical simulation methods for analyzing large nanophotonic structures**
Publication: Research - peer-review › Article in proceedings – Annual report year: 2018

**Buckling strength topology optimization of 2D periodic materials based on linearized bifurcation analysis**
Publication: Research - peer-review › Journal article – Annual report year: 2018

**Density based topology optimization of turbulent flow heat transfer systems**
Publication: Research - peer-review › Journal article – Annual report year: 2018

**Design of passive coolers for light-emitting diode lamps using topology optimisation**
Publication: Research - peer-review › Journal article – Annual report year: 2018
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Eriksen, E. H., Nazir, A., Balling, P., Vester-Petersen, J., Christiansen, R. E., Sigmund, O. & Madsen, S. P. 2018 In : Microelectronic Engineering. 199, p. 52-57
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Infill Optimization for Additive Manufacturing - Approaching Bone-like Porous Structures
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Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

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Material Interpolation Schemes in Topology Optimization
Bendsøe, M. P. & Sigmund, O. 1999 In : Archive of Applied Mechanics. 69, p. 635-654
Publication: Research - peer-review › Journal article – Annual report year: 1999

Material Interpolations in Topology Optimization
Bendsøe, M. P. & Sigmund, O. 1999 In : Archive of Applied Mechanics. 69, p. 635-654
Publication: Research - peer-review › Journal article – Annual report year: 1999

Multi Degrees of Freedom Electro-Thermal Microactuators
Publication: Research - peer-review › Article in proceedings – Annual report year: 1999

On the Optimality of Bone Microstructure
Publication: Research - peer-review › Article in proceedings – Annual report year: 1999

Stiffness design of geometrically non-linear structures using topology optimization
Buhl, T., Pedersen, C. B. W. P. & Sigmund, O. 1999
Topology Synthesis of Large-Displacement Compliant Mechanisms

Topology Synthesis of Two-Material Compliant Actuators
Sigmund, O. 1999 Proceedings of 1999 ASME-DETC. Las Vegas

A new Class of Extremal Composites
Sigmund, O. 1998

Design of Extreme Materials and Microrobots: Applications of Topology Optimization
Sigmund, O. 1998 In : Naturens Verden. p. 32-40

Design of materials with extreme elastic or thermoelastic properties using topology optimization

Multiphase Composites with Extreme Bulk Modulus
Gibiansky, L. V. & Sigmund, O. 1998

New Developments in Handling Optimal Stress Constraints in Optimal Material Distributions

Numerical instabilities in topology optimization: A survey on procedures dealing with checkerboards, mesh-dependencies and local minima
Sigmund, O. & Petersson, J. 1998 In : Structural Optimization. 16, p. 68-75

On the design of 1-3 piezo-composites using topology optimization

On the design of hydrophones made as 1-3 piezoelectrics

Optimering af konstruktioners topologi, form og materiale
Bendsoe, M. P. & Sigmund, O. 1998 Forskning, konstruktioner og eksperiment. p. 16-19

Optimering af konstruktioners topologi, form og materiale
Optimization of structural topology, shape, and materials
Bendsøe, M. P. & Sigmund, O. 1998
Publication: Research - peer-review › Book – Annual report year: 1998

Slope constrained Topology Optimization
Publication: Research - peer-review › Journal article – Annual report year: 1998

Systematic design of electrothermomechanical microactuators using topology optimization
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998

Systematic design of micro actuators using topology optimization
Publication: Research - peer-review › Journal article – Annual report year: 1998

Topology Optimization in Multiphysics Problems
Publication: Research - peer-review › Journal article – Annual report year: 1998

Design of materials with extreme thermal expansion using a three-phase topology optimization method
Publication: Research - peer-review › Journal article – Annual report year: 1997

Design and fabrication of compliant mechanisms and material structures with negative Poisson's ratio
Publication: Research - peer-review › Journal article – Annual report year: 1997

Design and fabrication of compliant micromechanisms and structures with negative Poisson's ratio
Publication: Research - peer-review › Journal article – Annual report year: 1997

Design of materials with extreme thermal expansion using a three-phase topology optimization method
Publication: Research - peer-review › Article in proceedings – Annual report year: 1997

Design of thermoelectric actuators using topology optimization
Sigmund, O. 1997 Proc. of the Second World Congress of Structural and Multidisciplinary Optimization. p. 393-398
Publication: Research - peer-review › Article in proceedings – Annual report year: 1997

On the design of 1-3 piezo-composites using topology optimization
Sigmund, O. & Torquato, S. 1997
Publication: Research - peer-review › Report – Annual report year: 1997

On the design of compliant mechanisms using topology optimization
Sigmund, O. 1997 In : Mechanics of structures and machines (Print). 25, 4, p. 493-524
Publication: Research - peer-review › Journal article – Annual report year: 1997

Slope Constrained Topology Optimization
Composites with extremal thermal expansion coefficients
Publication: Research - peer-review › Journal article – Annual report year: 1996

Design and fabrication of compliant mechanisms and material structures with negative Poissons ratio
Publication: Research - peer-review › Article in proceedings – Annual report year: 1996

Design and fabrication of compliant micro-mechanisms and structures with negative Poisson's ratio
Publication: Research - peer-review › Book chapter – Annual report year: 1996

Design and fabrication of compliant micromechanisms and structures with negative Poisson's ratio
Publication: Research - peer-review › Article in proceedings – Annual report year: 1996

Design and manufacturing of material microstructures and micromechanisms
Sigmund, O. 1996 Proceedings of the 3rd Int. Conf. on Intelligent Materials, ICIM 96. SPIE, p. 856-866
Publication: Research - peer-review › Article in proceedings – Annual report year: 1996

Design of Materials with extreme thermal expansion using a three-phase topology optimization method
Sigmund, O. 1996
Publication: Research - peer-review › Report – Annual report year: 1996

On the design of Compliant mechanisms using topology optimization
Sigmund, O. 1996
Publication: Research - peer-review › Report – Annual report year: 1996

Some inverse problems in topology design of materials and mechanisms
Publication: Research - peer-review › Article in proceedings – Annual report year: 1996

Projects:

Design optimization for resilient composite material microstructures
Bluhm, G. L., Sigmund, O., Poulis, K. & Wang, F.
01/05/2018 → 30/04/2021
Project: PhD

Multiscale topology optimization strategies including local and globas stability
Andersen, M. N., Sigmund, O., Aage, N. & Wang, F.
01/04/2018 → 31/03/2021
Project: PhD

PhD on Mesh Generation from Optimized Shapes
Stutz, F. C., Børrentzen, J. A., Aage, N. & Sigmund, O.
01/02/2018 → 31/01/2021
Project: PhD

Shape and Topology Optimization of Aeroelastic Systems
Conlan-Smith, C. J., Andreasen, C. S., Ramos García, N. & Sigmund, O.
15/11/2017 → 14/11/2020
Project: PhD

**Development of ultra-high quality mechanical oscillators**
Høj, D., Andersen, U. L. & Sigmund, O.
01/11/2017 → 31/10/2020
Project: PhD

**Topology optimization for transient problems**
Kristiansen, H., Aage, N., Poulios, K. & Sigmund, O.
15/09/2017 → 14/09/2020
Project: PhD

**Innovativt design af ståldragere til kabelbårne broer**
Baandrup, M. J., Poulsen, P. N., Olesen, J. F., Sigmund, O. & Sigmund, O.
01/01/2017 → 31/12/2019
Project: PhD

**Multiscale design methods for Topology Optimization**
Groen, J. P., Sigmund, O., Aage, N. & Lazarov, B. S.
01/01/2016 → 31/12/2018
Project: PhD

**Topology Optimization of Transient Heat Transfer Problems**
Zeidan, S., Sigmund, O., Engelbrecht, K. & Lazarov, B. S.
01/11/2015 → 30/04/2017
Project: PhD

**Topology Optimization of Thermoelectric Generators**
Lundgaard, C., Sigmund, O., Engelbrecht, K., Lazarov, B. S., Aage, N., Lund, E. & Wachutka, G.
01/04/2015 → 31/05/2018
Project: PhD

**Topology optimization of thermal heat sinks**
Engelbrecht, K., Haertel, J. H. K., Sigmund, O. & Lazarov, B. S.
01/11/2014 → 31/10/2017
Project

**Topology optimization of thermal heat sinks**
Haertel, J. H. K., Engelbrecht, K., Lazarov, B. S., Sigmund, O., Frandsen, H. L., Dede, E. M. & Langelaar, M.
01/11/2014 → 18/04/2018
Project: PhD

**Topology Optimization and Lattice Bolzmann Methods**
Nørgaard, S. A., Sigmund, O., Engelbrecht, K., Lazarov, B. S., Fuhrman, D. R., Evgrafov, A. & Stingl, M. W.
01/09/2014 → 01/02/2018
Project: PhD

**Topology optimization for medium- to high-frequency applications**
Christiansen, R. E., Sigmund, O., Jensen, J. S., Lazarov, B. S., Agerkvist, F. T., Berggren, M. & Schevenels, M.
15/06/2013 → 30/09/2016
Project: PhD

**Topology Optimisation for Multiscale Problems**
Alexandersen, J., Sigmund, O., Aage, N., Lazarov, B. S., Jensen, J. S., Guedes, J. A. P. L. M. & Maute, K.
15/03/2013 → 09/12/2016
Topology optimization for additive manufacturing
01/03/2013 → 09/12/2016
Project: PhD

Topology Optimisation for Coupled Convection Problems
Alexandersen, J., Sigmund, O., Andreasen, C. S. & Aage, N.
03/09/2012 → 22/02/2013
Project

Mathematical programming methods for large-scale structural topology optimization
Rojas Labanda, S., Stolpe, M., Sigmund, O., Jensen, J. S., Evgrafov, A. & Stingl, M. W.
01/09/2012 → 28/01/2016
Project: PhD

Interactive Topology Optimization
Nobel-Jørgensen, M., Bærentzen, J. A., Aage, N., Sigmund, O., Rose, M., Singh, K. S. & van Keulen, A.
01/04/2012 → 21/09/2015
Project: PhD

Modelling and design of Anodised Aluminium Surfaces
Johansen, V. E., Sigmund, O., Aage, N., Breinbjerg, O., Mortensen, N. A., Berggren, M. & Shin, J. H.
01/12/2011 → 19/03/2015
Project: PhD

Geometrical Design Representations for Topology Optimization
Christiansen, A. N., Bærentzen, J. A., Krzysztof Misztal, M., Sigmund, O., Dahl, A. B., Maute, K. & Wojtan, C.
01/11/2011 → 23/01/2015
Project: PhD

Optimal design of porous materials
Andkjær, J. A., Sigmund, O., Breinbjerg, O., Mortensen, N. A., Lavrinenko, A., Bozhevolnyi, S. I. & Leugering, G.
01/02/2009 → 02/05/2012
Project: PhD
Wireless Communication for Hearing Aid Systems
Nour, B., Breinbjerg, O., Mortensen, N. A., Sigmund, O., Meincke, P., Kabacik, P. & Nosich, A. I.
01/12/2008 → 20/09/2012
Project: PhD

Nanophotonics for terabit communications: VKR centre of excellence - NATEC
01/09/2008 → 31/08/2014
Project

Topology Optimization of Transient Optoelastic Wave-interaction Problems
Matzen, R., Sigmund, O., Jensen, J. S., Mørk, J., Diaz, A. R. & Kawamoto, A.
01/04/2008 → 31/08/2011
Project: PhD

Multiscale Optimization of Materials Subjected to Impact Loading
Andreasen, C. S., Sigmund, O., Jensen, J. S., Klarbring, A. & Rodrigues, H. C.
01/03/2008 → 28/09/2011
Project: PhD

Antenna Miniaturization in Complex Environments
Zhang, J., Breinbjerg, O., Mortensen, N. A., Sigmund, O., Meincke, P., Vázquez, M. M. & Ziolkowski, R. W.
01/01/2008 → 28/09/2011
Project: PhD

Systematic Design of Miniaturized Devices for Energy Transfer
Aage, N., Sigmund, O., Breinbjerg, O., Mortensen, N. A., Stolpe, M., Diaz, A. R. & Kawamoto, A.
01/01/2008 → 31/08/2011
Project: PhD

Topology Optimization for Crashworthiness Design Using Approximate Procedures
Amir, O., Stolpe, M., Sigmund, O., Evgrafov, A., Klarbring, A. & Lund, E.
15/09/2007 → 30/03/2011
Project: PhD

Automated Design of Advanced Mechatronic Systems
Dupuis, J., Fan, Z., Goodman, E., Sigmund, O., Blanke, M., Jin, Y. & Zhang, Q.
15/05/2007 → 11/05/2011
Project: PhD

Design of metamaterials
Bendsøe, M. P., Sigmund, O. & Diaz, A. R.
01/05/2007 → 31/12/2007
Project

Silicon-based Nanophotonic Structures for Controlling Light
Yang, L., Hvam, J. M., Lavrinenko, A., Sigmund, O., Melloni, A. & Willatzen, M.
01/11/2006 → 20/04/2011
Project: PhD

Microtools for Automated Nanomanipulation
Sardan Sukas, Ö., Bøggild, P., Mølhave, K., Sigmund, O., Jensen, J. S., Nelson, B. J. & Staufer, U.
15/10/2006 → 03/03/2010
Project: PhD
Tool Optimization for Welding Processes
Larsen, A. A., Stolpe, M., Hattel, J. H., Sigmund, O., Lindgren, L., Duysinx, P. & Lund, E.
15/06/2006 → 10/02/2010
Project: PhD

Topology Optimization of Surface Acoustic Wave Devises
Dühring, M. B., Sigmund, O., Jensen, J. S., Hansen, O., Maute, K. & Willatzen, M.
01/02/2006 → 21/10/2009
Project: PhD

Topology Optimization Problems with Design-Dependent Sets of Constraints
Schou, M. H., Stolpe, M., Evgrafov, A., Sigmund, O., Jørgensen, J. B., Kocvara, M. & Svanberg, K.
01/01/2006 → 30/06/2010
Project: PhD

Generation of Articulated Mechanisms by Optimization Techniques - Matrix Inequalities and Global Search
Kawamoto, A., Bendsøe, M. P., Sigmund, O., Klit, P., Eberhard, P. & Klarbring, A.
18/03/2005 → 18/03/2005
Project: PhD

Topographic optimization of photonic crystals and application to ultra-small and ultra-fast optical signal processing devices
Asakawa, K., Sugimoto, Y., Watanabe, Y., Nakamura, S., Ishikawa, H., Awazu, K., Watanabe, A., Kristensen, M., Borel, P. I., Sigmund, O. & Baets, R.
01/10/2004 → 30/09/2006
Project: PhD

Topologioptimering af strømninger under multifysisk belastning
01/02/2004 → 31/05/2007
Project: PhD

Topological design optimization of structures, machines and materials : IUTAM-SYMPOSIUM
Bendsøe, M. P., Sigmund, O. & Olhoff, N.
01/01/2004 → 31/12/2005
Project: PhD

Investigation of Nano-resonators for Mass Detection
Dohn, S., Boisen, A., Hansen, O., Sigmund, O., Bouwstra, S. & Lægsgaard, E.
01/09/2003 → 30/03/2007
Project: PhD

Fonon
Sigmund, O. & Tvergaard, V.
01/01/2003 → 31/12/2005
Project: PhD

Smart indpakning af fiber lasere
Voxen, L. H., Sigmund, O., Pedersen, J. E., Poulsen, C., Thomsen, J. J., Santos, I., Hald, J. & Tinnsten, M.
01/12/2001 → 18/05/2005
Project: PhD

Nanoresonators for high resolution mass detection
Davis, Z. J., Boisen, A., Hansen, O., Sigmund, O., Brand, O. & Brugger, J.
01/02/2000 → 30/06/2003
Project: PhD
Topology optimization of non-linear compliant systems
Buhl, T., Pedersen, P., Sigmund, O., Olhoff, N., Bestle, D. & Bletzinger, K.
01/09/1999 → 18/02/2003
Project: PhD

Topology Optimization of Non-linear Structures
01/07/1999 → 18/11/2002
Project: PhD

Material Interpolation Schemes in Topology Design
Bendsøe, M. P. & Sigmund, O.
01/02/1999 → 31/12/2000
Project

Fabrication, characterization and implementation of cantilevers for biochemical sensing
Thaysen, J., Boisen, A., Bouwstra, S., Grey, F., Frans de Rooij, N., Brugger, J. & Sigmund, O.
01/01/1999 → 16/11/2001
Project: PhD

Improving the buckling performance of topology designed periodic microstructures
Bendsøe, M. P., Sigmund, O. & Neves, M.
01/01/1999 → 31/12/2000
Project

Development of interconnect substrates in silicon with flexible regions for multichip microsystems
Lisby, T., Hansen, O., Branebjerg, J., Sigmund, O., Dyrbye, K. & Schweitz, J.
01/10/1998 → 29/10/2002
Project: PhD

Multi-scale Representations in Design Optimization
Poulsen, T. A., Sigmund, O., Bendsøe, M. P., Pedersen, P., Lund, E., Petersson, J. & Soto, C. A.
01/09/1998 → 12/07/2002
Project: PhD

Optimal topology design of dissipative structures
Bendsøe, M. P., Sigmund, O., Pedersen, C. B. W. & Taylor, J.
01/08/1998 → …
Project

CMOS kompatible multilag metalliske mikrostrukturer for intelligente transducere
Ravnkilde, J. T., Hansen, O., Sigmund, O., Gravesen, P. & Wagner, B.
01/03/1997 → 21/06/2001
Project: PhD

Teknologiudvikling for mikroakruatorer
Jonsmann, J., Bouwstra, S., Sigmund, O. & Sparsø, J.
01/07/1996 → 17/07/2000
Project: PhD

Topology Optimization - Methods, Convergence and Adaptive Finite Elements
Petersson, J., Bendsøe, M. P. & Sigmund, O.
01/03/1996 → 28/02/1997
Project
Optimal Design and manufacturing of composite materials
Sigmund, O. & Torquato, S.
01/09/1995 → …
Project

Design and Manufacturing of MicroElectroMechanical Systems (MEMS)
Sigmund, O., Pedersen, N. L. & Tchemiak, D.
01/06/1994 → …
Project

Numerical problems in topology optimization
Sigmund, O., Petersson, J. & Bourdin, B.
01/01/1993 → …
Project

Optimal design af adaptive konstruktioner
Sigmund, O., Pedersen, P. & Bendse, M. P.
09/12/1992 → 20/03/1995
Project: PhD

Activities:

International Workshop on Optical Waveguide Theory and Numerical Modelling (OWTNM); 19
Sigmund, O. (Speaker)
9 Apr 2010 → 10 Apr 2010
Activity: Talks and presentations › Conference presentations

Comsol Conference 2008
Sigmund, O. (Participant)
4 Nov 2008 → 6 Nov 2008
Activity: Attending an event › Participating in or organising a conference

ASME 2008 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference
Sigmund, O. (Participant)
Activity: Attending an event › Participating in or organising a conference

2008 MRS Spring Meeting & Exhibit
Sigmund, O. (Participant)
Activity: Attending an event › Participating in or organising a conference