We also express our gratitude to the Deutsche Forschungsgemeinschaft (DFG) for their support.
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Welcome Message

On behalf of the International Society for Structural and Multidisciplinary Optimisation (ISSMO), we warmly welcome you all to the Twelfth World Congress of Structural and Multidisciplinary Optimisation held at the Technische Universität Braunschweig, Germany from the 5th to 9th June, 2017.

As a top tier international society, ISSMO was founded in October 1991 by George Rozvany and has held the World Congress of Structural and Multidisciplinary Optimisation (WCSMO) biennially since 1995. This 12th conference is held in Germany, like the first WCSMO, which was held in Goslar (45 km from Braunschweig), Germany. In the intervening years, every WCSMO has been held in different continents, and the width and scope of the research presented has increased dramatically. We would like to thank all the participants for joining the Congress and hope that the experience in WCSMO12 proves interesting and enjoyable. We would like to express our gratitude to all members of the committees involved in the organisation of this congress, to all the contributing authors and participants, and to all the fellow students and staff members in the secretariat, who helped create this congress. Also, we thank the sponsors listed on the cover page of this program book who contributed to making this Congress financially viable.

451 papers (170 with full-length papers) will be presented through oral presentations (418) or through posters (33) with topics ranging from topology and shape optimization to multidisciplinary optimization. We hope that these presentations will initiate and inspire lively discussions. The traditional State of the Art (SOTA) presentation on the Thursday (8th June) afternoon will be delivered by invited specialists for these topics and should stimulate interesting discussions at the congress dinner in the Phaeno in Wolfburg. The General Assembly will be held on the Tuesday (6th June) afternoon where the ISSMO president, the Secretary General, the Treasurer, and the SMO journal editor will present their reports. The traditional WCSMO excursion, will be on Friday (9th June). The delegates will have the opportunity to visit the “Autostadt” in Wolfsburg or the old town of Goslar and the Mines of Rammelsberg – both UNESCO World Heritage sites. Finally, we hope that you all meet as many new colleagues as possible and remember the 12th WCSMO as a friendly experience.

Local Organizing Committee of the WCSMO12

Kai-Uwe Bletzinger
Sierk Fiebig
Kurt Maute
Axel Schumacher
Thomas Vietor

President and Secretary General of ISSMO

Gengdong Cheng
James K. Guest
About the Location

Braunschweig has a lot to offer, not least of all its unique charm: that of a large and modern city with a rich past, where you can find refreshing green oases of leisure alongside the bustle of inner city life. First mentioned in records in 1031, Braunschweig continued to evolve, from the 12th century on strongly influenced by the House of Welf and the Hanseatic tradition. Magnificent historical buildings such as Dankwarderode Castle and St. Blasii Cathedral in the heart of the city, as well as streets lined with historic houses, still bear witness to Braunschweig’s eventful past.

The Technische Universität Braunschweig is one of the oldest technical universities in Germany. Research focus are Mobility, Life-Sciences and City of the Future. The research is focused in research centers like the NFF (Niedersächsisches Forschungszentrum Fahrzeugtechnik) where research in Mobility is done.
About the ISSMO and the WCSMO

The International Society for Structural and Multidisciplinary Optimisation (ISSMO) was founded in October 1991. Today ISSMO has almost one thousand members from more than 50 countries.

The objectives of ISSMO are:

- to stimulate and promote research into all aspects of the optimal design of structures as well as multidisciplinary design optimization where the involved disciplines deal with the analysis of solids, fluids or other field problems
- to encourage practical applications of optimisation methods and the corresponding software development in all branches of technology
- to foster the interchange of ideas amongst various fields contributing to structural and multidisciplinary optimisation
- to support the role of optimization in multidisciplinary design
- to provide a framework for the organization of meetings and other means for the dissemination of knowledge on structural and multidisciplinary optimisation and
- to promote teaching of structural and multidisciplinary optimisation in tertiary institutions.

One of the aims of ISSMO is to bring together researchers and practitioners in the field of structural and multidisciplinary optimisation (SMO), by means of international meetings having a high scientific standard. Host selection criteria should include: up-to-date conference facilities, affordable costs to all members of the society (including registration, hotel, travel expenses, considering also free lunches, banquet, excursions etc.), proven congress organizing experience and strength of the local organizing group, geographical diversity reflecting the distribution of SMO researchers over the world.

This is meant to imply a reasonably uniform distribution of congresses over three zones, namely Asia-Australia, Europe-Africa and North & South Americas. Along these lines, ISSMO has held biennial World Congresses of Structural and Multidisciplinary Optimization since 1995:

- Goslar, Germany in 1995 (WCSMO-1)
- Zakopane, Poland in 1997 (WCSMO-2)
- Buffalo, United States in 1999 (WCSMO-3)
- Dalian, China in 2001 (WCSMO-4)
- Lido di Jesolo, Italy in 2003 (WCSMO-5)
- Rio de Janeiro, Brazil in 2005 (WCSMO-6)
- Seoul, South Korea in 2007 (WCSMO-7)
- Lisbon, Portugal in 2009 (WCSMO-8)
- Shizouka, Japan in 2011 (WCSMO-9)
- Orlando, United States in 2013 (WCSMO-10)
- Sydney, Australia in 2015 (WCSMO-11)
ISSMO Executive Committee

President       Gengdong Cheng       Dalian University of Technology, China
Vice Presidents Pierre Duysinx        University of Liège, Belgium
               Yoon Young Kim        Seoul National University, Korea
Secretary General James K. Guest     Johns Hopkins University, USA
Treasurer       Erik Lund            Aalborg University, Denmark
EC Members      Wei Chen             Northwestern University, USA
               Nam-Ho Kim           University of Florida, USA
               Ming Zhou           Altair Engineering, USA

Organizing Committees of WCSMO12

Local Organizing Committee

Kai-Uwe Bletzinger       Technical University of Munich, Germany
Sierk Fiebig              Volkswagen AG, Germany
Kurt Maute                University of Colorado Boulder, USA
Axel Schumacher           University of Wuppertal, Germany
Thomas Vietor             Technische Universität Braunschweig, Germany

International Papers Committee

Byeng Dong Youn (Chair)   Seoul National University, Korea
Axel Schumacher (LOC)    University of Wuppertal, Germany
Qing Li (past LOC)       University of Sydney, Australia
Ramana Grandhi           Wright State University, USA
Zhan Kang                Dalian University of Technology, China
Niels Pedersen           Technical University of Denmark, Denmark
Maps

Main Campus of the Technische Universität Braunschweig

Altgebäude
Opening Ceremony

Monday, 5th June 2017
10:00 – 11:10, Audimax

Please join us for the Opening Ceremony, to be held in the Audimax.

Agenda

• Welcome from the Local Organizing Committee: Professor Thomas Vietor
• Welcome Speech: Professor Gengdong Cheng (President of ISSMO)
• Plenary Lecture: Cord Rossow (German Aerospace Center, Braunschweig):
  Towards the Digital Aircraft: Future Aircraft Design Using Numerical Simulation and Multidisciplinary Optimization

Welcome Reception

Monday, 5th June 2017
18:30 – 24:00, University Square & Audimax

Please join us for the Welcome Reception. In good weather, we are outside. Otherwise we are inside the Audimax.
Women Researcher’s Networking Lunch

Tuesday, 6th June 2017
13:00 – 14:00, Haus der Wissenschaft

All WCSMO12 women attendees are welcome to attend this lunch event sponsored by the ISSMO (International Society for Structural and Multidisciplinary Optimization) and the local organizing committee of WCSMO12, aiming for providing a networking opportunity for women attendees of the conference.

Organizers
Professors Wei Chen (Northwestern University, USA)
H Alicia Kim (University of California at San Diego, USA)

General Assembly

Tuesday, 6th June 2017
16:20 – 18:00, Audimax

Please join us for the General Assembly, to be held in the Audimax.

Agenda

1. President’s report
2. Secretary General’s report
3. Treasurer’s report
4. SMO Editor’s report
5. Professor Axel Schumacher (Local Organizing Committee): Content classification of the WCSMO12 contributions
6. ISSMO Springer prize and brief presentation by the recipient Joe Alexandersen for the paper titled „Topology optimisation of passive coolers for light-emitting diode lamps”
7. Call for proposals for the WCSMO-12 ISSMO Springer prize
8. WCSMO-12 Congress Fellowship Award
9. Call for proposals for the WCSMO-13
10. Other business
State-of-the-Art Discussion
Thursday, 8th June 2017
16:20 – 18:00, Audimax

Please join us for the State-of-the-Art (SOTA) Discussion, to be held in the Audimax. Four panelists will present and discuss the emerging trends in various technology areas relevant to the WCSMO-12.

Panelists

**Professor Daniel Tortorelli**
University of Illinois at Urbana Champaign
Topology Optimization: Achievements and New Frontiers

**Professor Zhan Kang**
Dalian University of Technology
Design under uncertainty: from variability to model-form uncertainty and design validation

**Professor Yoon Young Kim**
Seoul National University
Material design: metamaterials, additive manufacturing and new functional materials

**Dr. Claus Pedersen**
Dassault Systems
Design applications: success stories and emerging opportunities
Conference Dinner
Thursday, 8th June 2017
18:15 – 24:00, Bus transfer to phaeno

For the Conference Dinner, we will take you to one of the most exciting places in the region – the phaeno in Wolfsburg. This exceptional building was created by star architect and Pritzker Prize winner Zaha Hadid. You will experience “one of the dozen most important modern works of architecture in the world” (The Guardian) and have dinner right in the middle of what during opening hours is a scene for hundreds of fascinating interactive exhibits that let visitors from all over the globe experience the world of natural sciences and technology.

The bus transfer to the phaeno will start after the SOTA Discussion around 18:15. Meeting point is the square in front of the Audimax. The transfer will take about 45 minutes and following an aperitif the dinner will start around 20:00.

After the dinner you have time to mingle and discover the experiments exhibited inside the phaeno. Buses going back to Braunschweig will leave at regular intervals. Departure times will be provided at the location, the last bus will leave at 22:45.
Excursion
Friday, 9th June 2017

Wolfsburg

The Autostadt is a visitor attraction adjacent to the Volkswagen factory in Wolfsburg. It combines a wide range of activities for automobile fans, art and culture connoisseurs, gourmets and people who love architecture and design. On this excursion, you will go on a journey into the world of mobility. Situated in 28 hectares of parkland, architecture, design and nature provide the framework for its many and diverse attractions – including a factory tour: the panorama train will take you right into the heart of automobile production where you will be able to see how Volkswagen cars are made.

Goslar

This excursion will take you to the medieval old town of Goslar and the Mines of Rammelsberg – both UNESCO World Heritage sites. Goslar has an over-1000-year history. For centuries it was the favoured seat of government in northern Germany and at the same time a centre of Christianity, referred to as the “Rome of the North”. Still today the many crooked, narrow, cobble-stoned streets in the Old Town are an adventure of their own. From the impressive Romanesque Imperial Palace you will have a tremendous view: In the naturally scenic background the over 600-metre-high Rammelsberg Mountain rises. In it we will visit the Mines of Rammelsberg, the only mines which had been working continuously for over 1,000 years when they finally closed in 1988.

Please see the additional leaflet for information on the meeting point and departure times for the bus transfer to both excursions. You also have the possibility to start your journey home from the excursion locations. Details on train connections can also be found on the leaflet.
### Monday, 5th June 2017

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<td>1</td>
<td>Multi-disciplinary optimization 1</td>
<td>Design of Experiments and surrogate models (meta-models) 1</td>
<td>Sizing</td>
<td>Topology optimization with density methods 1</td>
<td>Topology optimization with level set methods 1</td>
<td>Optimization with emphasis on particular physics model Considering static and quasi-static load-cases</td>
<td>Optimization with emphasis on particular physics model Including fluid simulation 1</td>
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<td>2</td>
<td>Multi-disciplinary optimization 2</td>
<td>Design of Experiments and surrogate models (meta-models) 2</td>
<td>Fibers and composites optimization 1</td>
<td>Topology optimization with density methods 2</td>
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<td>Optimization with emphasis on particular physics model Considering non-linear effects 1</td>
<td>Optimization with emphasis on particular physics model Including fluid simulation 2</td>
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<td>3</td>
<td>Multi-disciplinary optimization 3</td>
<td>Design of Experiments and surrogate models (meta-models) 3</td>
<td>Fibers and composites optimization 2</td>
<td>Topology optimization with density methods 3</td>
<td>Topology optimization with level set methods 3</td>
<td>Optimization with emphasis on particular physics model Considering non-linear effects 2</td>
<td>Optimization with emphasis on particular physics model Including manufacturing 1</td>
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<td></td>
<td>Welcome Reception</td>
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### Tuesday, 6th June 2017

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<td>Multi-disciplinary optimization 4</td>
<td>Geometry modelling aspects 1</td>
<td>Fibers and composites optimization 3</td>
<td>Topology optimization with density methods 4</td>
<td>Topology optimization with level set methods 4 (additive manufacturing)</td>
<td>Optimization with emphasis on particular physics model Considering non-linear effects 3</td>
<td>Optimization with emphasis on particular physics model Including manufacturing 2 (casting)</td>
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<tr>
<td>5</td>
<td>Multi-objective optimization</td>
<td>Geometry modelling aspects 2</td>
<td>Fibers and composites optimization 4</td>
<td>Topology optimization with density methods 5</td>
<td>Topology optimization with other methods 1</td>
<td>Optimization with emphasis on particular physics model Considering non-linear effects 4</td>
<td>Optimization with emphasis on particular physics model Integration of material models (micro-/nano-structures)</td>
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<td>6</td>
<td>Uncertainty and robust design 1</td>
<td>Sensitivity analysis 1</td>
<td>Shape optimization 1</td>
<td>Topology optimization with density methods 6</td>
<td>Topology optimization with other methods 2</td>
<td>Optimization with emphasis on particular physics model Considering dynamic load-cases 1</td>
<td>Optimization with emphasis on particular physics model Considering piezoelectricity, magnetic and electrical fields</td>
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<tr>
<td></td>
<td>General Assembly (Audimax)</td>
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<tr>
<td>7</td>
<td>Uncertainty and robust design 2</td>
<td>Sensitivity analysis 2</td>
<td>Shape optimization 2</td>
<td>Topology optimization with density methods 7</td>
<td>Topology optimization with other methods 3</td>
<td>Optimization with emphasis on particular physics model</td>
<td>Considering multi-physics, multi-disciplinary</td>
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<tr>
<td>9</td>
<td>Uncertainty and robust design 3</td>
<td>General aspects of single-objective optimization 1</td>
<td>Optimization focusing on particular industrial applications Aircraft</td>
<td>Topology optimization with density methods 9 (environments)</td>
<td>Topology optimization with other methods 4</td>
<td>Optimization with emphasis on particular physics model</td>
<td>Considering dynamic load-cases 3 (topology optimization)</td>
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<tr>
<td>10</td>
<td>Uncertainty and robust design 4</td>
<td>General aspects of single-objective optimization 2</td>
<td>Optimization focusing on particular industrial applications Civil engineering 1</td>
<td>Topology optimization with density methods 10 (additive manufacturing)</td>
<td>Topology optimization with other methods 5</td>
<td>Optimization with emphasis on particular physics model</td>
<td>Considering crash load-cases 1</td>
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## Thursday, 8th June 2017

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<tr>
<td>11</td>
<td>Uncertainty and robust design 5</td>
<td>Optimization algorithms: local mathematical methods 1</td>
<td>Optimization focusing on particular industrial applications Civil engineering 2</td>
<td>Topology optimization with density methods 11 (additive manufacturing)</td>
<td>Topology optimization with other methods 6 (truss)</td>
<td>Optimization with emphasis on particular physics model</td>
<td>Crash load-cases 2 (topology optimization)</td>
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<tr>
<td>12</td>
<td>Uncertainty and robust design 6</td>
<td>Optimization algorithms: local mathematical methods 2</td>
<td>Optimization focusing on particular industrial applications Automotive 1</td>
<td>Topology optimization with density methods 12 (additive manufacturing)</td>
<td>Parameter identification</td>
<td>Optimization with emphasis on particular physics model</td>
<td>Considering fatigue/durability/damage 1</td>
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<td>13</td>
<td>Uncertainty and robust design 7</td>
<td>Optimization algorithms: global methods (e.g. evolutionary algorithms)</td>
<td>Optimization focusing on particular industrial applications Automotive 2</td>
<td>Topology optimization with density methods 13 (fluid and heat)</td>
<td>General aspects of single-objective optimization 3</td>
<td>Optimization with emphasis on particular physics model</td>
<td>Considering fatigue/durability/damage 2</td>
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**State-of-the-Art Discussion** (Audimax)

**Conference Dinner**
# Session 1

**Monday, 5th June 2017**

**11:20 – 13:00**

## General approaches and strategies

### Multi-disciplinary optimization

**Chair:** Panos Papalambros (University of Michigan, USA)

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<th>Room: PK 4.1</th>
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<tbody>
<tr>
<td>12:00</td>
<td>493</td>
<td>Joan Mas Colomer</td>
<td>Static and Dynamic Aeroelastic Scaling of the CRM Wing via Multidisciplinary Optimization</td>
<td>Joan Mas Colomer, Nathalie Bartoli, Thierry Lefebvre, Sylvain Dubreuil, Peter Schmolzgruber, Joseph Morlier</td>
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<tr>
<td>12:20</td>
<td>494</td>
<td>Palaniappan Ramu</td>
<td>Status of SMO research in India</td>
<td>Palaniappan Ramu, Ananthasuresh G, Ravi Salagame, Vinay Ramanath</td>
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## Design of Experiments and surrogate models (meta-models) 1

**Chair:** Christian Gogu (Université de Toulouse, France)

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<tr>
<td>11:20</td>
<td>402</td>
<td>Raphael Haftka</td>
<td>Predicting B-Basis Allowable at Untested Points from Experiments and Simulations of Plates with Holes</td>
<td>Yiming Zhang, Jaco Schutte, John Meeker, Upul Palliyaguru, Nam Kim, Raphael Haftka</td>
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<tr>
<td>11:40</td>
<td>423</td>
<td>Cho Su-gil</td>
<td>Response-weighted maximin distance design for multi-sampling</td>
<td>Cho Su-gil, Park Sanghyun, Jang Junyong, Lee Minuk, Min Cheon Hong, Lee Tae Hee</td>
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<tr>
<td>12:00</td>
<td>496</td>
<td>Schalk Kok</td>
<td>Simple Intuitive Multi-objective Parallelization of Efficient Global Optimization: SIMPLE-EGO</td>
<td>Carla Grobler, Schalk Kok, Nico Wilke</td>
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<tr>
<td>12:20</td>
<td>503</td>
<td>Melina Ribaud</td>
<td>Robustness criterion for the optimization schemes based on kriging metamodels</td>
<td>Melina Ribaud, Frederic Gillot, Christophe Blanchet-Scaliet, Celine Helbert, Celine Vial</td>
</tr>
<tr>
<td>12:40</td>
<td>142</td>
<td>Dawei Zhan</td>
<td>Pseudo expected improvement matrix criteria for parallel expensive multi-objective optimization</td>
<td>Dawei Zhan, Jiachang Qian, Jun Liu, Yuansheng Cheng</td>
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### Room: SN 19.1 | Structural optimization  
**Title**: Topology optimization with density methods 1

**Chair**: Akihiro Takezawa (Hiroshima University, Japan)

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<tr>
<td>11:20</td>
<td>2</td>
<td>Lothar Harzheim</td>
<td>Comparison of different formulations of a front hood free sizing optimization problem using the ESL-method</td>
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<td>(Adam Opel AG, Germany)</td>
<td>Artem Karev, Lothar Harzheim, Rainer Immel, Matthias Erzgraebner</td>
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<td>11:40</td>
<td>88</td>
<td>Daniel Milbrath De Leon</td>
<td>A study on the design of large displacement compliant mechanisms with a strength criteria using topology optimization</td>
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<td>(Federal University of Rio Grande, Brazil)</td>
<td>Daniel Milbrath De Leon, Juliano Fagundes Gonçalves</td>
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<tr>
<td>12:00</td>
<td>450</td>
<td>Jaeae Yoo</td>
<td>Efficient density based topology optimization using dual layer element and variable grouping method for large 3D applications</td>
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<td>(KAIST, ADD, Korea)</td>
<td>Jaeae Yoo, Iijin Lee</td>
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<td>12:20</td>
<td>514</td>
<td>Julian Norato</td>
<td>An Improved Aggregation Function for Topology Optimization with Discrete Geometric Elements</td>
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<td>(University of Connecticut, USA)</td>
<td>Julian Norato, Hesaneh Kazemi</td>
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<td>12:40</td>
<td>542</td>
<td>Alex Ferrer</td>
<td>SIMP-ALL: a generalized SIMP method based on topological shape derivatives</td>
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<td>(CIMNE, Spain)</td>
<td>Alex Ferrer, Samuel Amstutz, Charles Dapogny</td>
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### Room: SN 19.2 | Structural optimization  
**Title**: Topology optimization with level set methods 1

**Chair**: Yoon Young (Seoul National University, Korea)

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<td>11:20</td>
<td>134</td>
<td>Takayuki Yamada</td>
<td>Level set-based topology optimization for multi-material problems</td>
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<td>(Kyoto University, Japan)</td>
<td>Takayuki Yamada, Naoki Kishimoto, Kazuhiro Izui, Shirji Nishiwaki</td>
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<tr>
<td>11:40</td>
<td>141</td>
<td>Hyundo Shin</td>
<td>Topological structure design for microwave applications using a new interpolation scheme</td>
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<td>(Yonsei University, Korea)</td>
<td>Hyundo Shin, Jeonghoon Yoo</td>
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<td>12:00</td>
<td>144</td>
<td>Zhan Kang</td>
<td>New advances of manufacturing and interface-related topology optimization problems with implicit geometrical description</td>
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<td>(Dalian University of Technology, China)</td>
<td>Zhan Kang, Pai Liu, Yaguang Wang, Yiqiang Wang</td>
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<td>12:20</td>
<td>184</td>
<td>Peter Dunning</td>
<td>Length-scale constraints for parameterized implicit function based topology optimization</td>
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<td>(University of Aberdeen, UK)</td>
<td>Peter Dunning</td>
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<td>Room:</td>
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<td>Optimization with emphasis on particular physics model</td>
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<tr>
<td>Chair: Jaan Lellep (Tartu University, Estonia)</td>
<td></td>
<td>Considering static and quasi-static load-cases (compliance and stress)</td>
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<tr>
<td>11:20</td>
<td>161</td>
<td>Luc Laurent (Conservatoire National des Arts et Métiers, France)</td>
<td>Optimal positioning of a wall in an acoustic cavity using reduced models and surrogate based optimization</td>
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<tr>
<td>11:40</td>
<td>341</td>
<td>Kook Jin Park (Toyota Technological Institute, Japan)</td>
<td>Buckling optimization design of grid-stiffened shell considering numerical global and local buckling mode with machine learning process</td>
</tr>
<tr>
<td>12:00</td>
<td>501</td>
<td>Karol Bolbotowski (Warsaw University of Technology, Poland)</td>
<td>Grillage layout optimization - theory and numerical methods</td>
</tr>
<tr>
<td>12:20</td>
<td>516</td>
<td>Wolfgang Achtziger (University of Erlangen-Nürnberg, Germany)</td>
<td>On Classical Problem Formulations of Compliance Minimization and Maximization of Discrete and Discretized Structures --- Material Laws at the Optimum Revisited</td>
</tr>
<tr>
<td>12:40</td>
<td>483</td>
<td>Tong Gao (Northwestern Polytechnical University, China)</td>
<td>Topology optimization of continuum structures under the variance constraint of reaction forces</td>
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<th>SN 19.3</th>
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<th>Optimization with emphasis on particular physics model</th>
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<tr>
<td>Chair: Gil-Ho Yoon (Hanyang University, Korea)</td>
<td></td>
<td>Including fluid simulation 1</td>
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<tr>
<td>11:20</td>
<td>322</td>
<td>Ayami Sato (Kyoto University, Japan)</td>
<td>A topology optimization method for molecular gas dynamics based on the Boltzmann equation</td>
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<tr>
<td>11:40</td>
<td>359</td>
<td>M. Giselle Fernández-Godino (University of Florida, United States)</td>
<td>Optimization as a tool to explore the physics in particle jet formation during explosive dispersal of solid particles</td>
</tr>
<tr>
<td>12:00</td>
<td>387</td>
<td>Ram Ranjan (United Technologies Research Center, USA)</td>
<td>Implementation of Turbulent Flow in Topology Optimization</td>
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<td>12:20</td>
<td>443</td>
<td>Noemi Friedman (TU Braunschweig, Germany)</td>
<td>Bayesian parameter identification of turbulence model with complex parameter space</td>
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<td>12:40</td>
<td>540</td>
<td>Qing Li (The University of Sydney, Australia)</td>
<td>Topographical Optimization for Surface Properties of Materials</td>
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# Session 2

**Monday, 5th June 2017**  
**14:00 – 15:40**

| Room: PK 4.1 | General approaches and strategies  
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<tr>
<td><strong>Chair: Katrin Weider (Bergische Universität Wuppertal, Germany)</strong></td>
<td>Multi-disciplinary optimization 2</td>
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</table>
| 14:00 | 403 | Ling Kang  
(Dalian Neusoft University of Information, China) | Multi-scale Docking Method in Computer-aided Molecular Design  
Ling Kang, Hong Wang, Junfeng Gu |
| 14:20 | 404 | Hong Wang  
(Dalian Neusoft University of Information, China) | Parameter Estimation Based on Model Reduction and Kriging Surrogate  
Hong Wang, Ling Kang |
| 14:40 | 389 | Benyamin Ebrahimi  
(K.N. Toosi University of Technology, Iran) | An Augmented Sequential Optimization and Reliability Assessment for Uncertainty-based Multidisciplinary Design Optimization  
Jafar Roshanian, Ali Asghar Bataleblu, Benyamin Ebrahimi, Ali Akbar Amini |
| 15:00 | 390 | Mohammad Hosein Farghadani  
(K.N. Toosi University of Technology, Iran) | Metamodel-based Multidisciplinary Design Optimization of a General Aviation Aircraft  
Jafar Roshanian, Ali Asghar Bataleblu, Mohammad Hosein Farghadani, Benyamin Ebrahimi |
| 15:20 | 392 | Gil Ho Yoon  
(Hanyang University, Seoul, Korea) | Structural Optimization For Piezoelectric Acoustic Devices  
Gil Ho Yoon, Hyung Gyu |

| Room: PK 4.3 | General approaches and strategies  
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<tr>
<td><strong>Chair: Nam-Ho Kim (University of Florida, USA)</strong></td>
<td>Design of Experiments and surrogate models (meta-models) 2</td>
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| 14:00 | 217 | Kibong Kang  
(Hanyang Univ., South Korea) | A new performance prediction method based on a local metamodel built using large data  
Kibong Kang, Dong-Hoon Choi |
| 14:20 | 308 | Ankit Chiplunkar  
(Airbus Operations S.A.S., France) | Gaussian Process for Aerodynamic Pressures Prediction in Fast Fluid Structure Interaction Simulations  
Ankit Chiplunkar, Elisa Bosco, Joseph Morlier |
| 14:40 | 331 | Lionel Tomaso  
(ANSYS, Inc, France) | Automatic selection for general surrogate models  
Malek Ben Salem, Lionel Tomaso |
| 15:00 | 332 | Malek Ben Salem  
(Ecole des mines de St-Etienne (EMSE), ANSYS, Inc, France) | Universal prediction distribution for surrogate models  
Malek Ben Salem, Olivier Roustant, Fabrice Gamboa, Lionel Tomaso |
| 15:20 | 342 | Kyeonghwan Kang  
(KAIST, South Korea) | Efficient Metamodeling Strategy using Multivariate Linear Interpolation for High Dimensional Problems  
Kyeonghwan Kang, Ikkjin Lee |
### Structural optimization

- **Fibers and composites optimization 1**

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<tr>
<td>14:00</td>
<td>401</td>
<td>Tsuboshi Nomura (Toyota Central R&amp;D Labs., Inc., Japan)</td>
<td>Topology optimization method for variable-axial composite Tsuboshi Nomura, Tsuguo Kondoh, Axel Spickenheuer, Mario Petrovic, Shinji Nishiwaki</td>
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<tr>
<td>14:20</td>
<td>502</td>
<td>Perle Geoffroy-Donders (Safran, France)</td>
<td>Topological optimization of quasi-periodic structures, by the homogenization method Perle Geoffroy-Donders, Grégory Allaire, Julien Coriol, Olivier Pantz</td>
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<td>14:40</td>
<td>518</td>
<td>Christian Carstensen (Technical University of Denmark, Denmark)</td>
<td>3D structural topology optimization of wind turbine blades with stiffness and frequency constraints Christian Carstensen, Mathias Stolpe, Susana Rojas Labanda, José Pedro Blasques</td>
</tr>
<tr>
<td>15:00</td>
<td>548</td>
<td>Stefan Szniszewski (University of Surrey, UK)</td>
<td>Woven Lattice Materials with Tunable Stiffness and Permeability. Wind tunnel results of optimised material architectures; Topic: Smart Structures and Materials Stefan Szniszewski, Manuel Pelacci, Jao Aguero, Yu Liu</td>
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<td>15:20</td>
<td>442</td>
<td>Haichao An (Beihang University, China)</td>
<td>Stacking sequence optimization and blending of composite laminates with a two-level approximation method Haichao An, Hai Huang, Shenyuan Chen</td>
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- **Structural optimization**

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<td>14:00</td>
<td>248</td>
<td>Oded Amir (Technion - Israel Institute of Technology, Israel)</td>
<td>Satisfying stress constraints in density based topology optimization by length scale control Oded Amir, Boyan Lazarov</td>
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<td>14:20</td>
<td>273</td>
<td>Marine Favre Decloux</td>
<td>Topology Optimization and Reinforcement Derivation Method (RDM®) of a Hybrid Material Sump Alex Desmond, Lucy Fusco, Martin Gambling and Markus Hose</td>
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<td>14:40</td>
<td>394</td>
<td>Pierre Duysinx (University of Liege, Belgium)</td>
<td>Definition of reference test cases for stress constrained topology optimization Pierre Duysinx, Maxime Collet, Erin Kuci, Dirk Munro, Albert Groenwold, Matteo Bruggi</td>
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<td>15:00</td>
<td>430</td>
<td>Seung-Hyun Ha (Korea Maritime and Ocean University, Korea)</td>
<td>Topology Optimization with Super-Elliptical Discrete Object Projections Seung-Hyun Ha</td>
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- **Structural optimization**

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<th>Time</th>
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<tr>
<td>14:00</td>
<td>202</td>
<td>Peter Gangl (RICAM, Austria)</td>
<td>Sensitivity-based design optimization of electric motors Peter Gangl</td>
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<td>14:20</td>
<td>245</td>
<td>Hiroaki Takahashi (Kyoto University, Japan)</td>
<td>Level set-based topology optimization method for the design of a perfectly absorbing metasurface Hiroaki Takahashi, Takayuki Yamada, Shinji Nishiwaki, Kazuhiro Izui</td>
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<tr>
<td>14:40</td>
<td>266</td>
<td>H Alicia Kim (UC San Diego, USA, Cardiff University, UK)</td>
<td>Global Topology Optimization?: Stochastic Level-Set Method Lester Hedges, H Alicia Kim, Robert Jack</td>
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<td>15:00</td>
<td>294</td>
<td>Kozo Furuta (Kyoto University, Japan)</td>
<td>Level set-based topology optimization for thermoelectric nanostructures considering the temperature discontinuity, based on the Boltzmann transport equation Kozo Furuta, Ayami Sato, Kazuhiro Izui, Mitsuhiro Matsumoto, Takayuki Yamada, Shinji Nishiwaki</td>
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</table>
### Optimization with emphasis on particular physics model

**Considering non-linear effects (e.g., material, geometric, contact)**

**Chair:** Andres Tovar (Purdue University, USA)

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<tr>
<td>14:00</td>
<td>157</td>
<td>Mathias Wallin (Lund University, Sweden)</td>
<td>Optimization of non-linear structures using the tangent stiffness</td>
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<td>Mathias Wallin, Niklas Ivarsson, Daniel Tortorelli</td>
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<td>14:20</td>
<td>230</td>
<td>Niclas Strömberg (Örebro University, Sweden)</td>
<td>Topology Optimization of Orthotropic Elastic Design Domains with Mortar Contact Conditions</td>
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<td>Niclas Strömberg</td>
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<td>14:40</td>
<td>236</td>
<td>Mengxiao Li (Edinburgh Napier University, UK)</td>
<td>Topology optimization of structures with elasto-plastic strain-hardening material modeling</td>
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<td>Mengxiao Li, Hexin Zhang, Simon, Ho Fai Wong</td>
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<tr>
<td>15:00</td>
<td>410</td>
<td>Tuo Zhao (Georgia Institute of Technology, USA)</td>
<td>An Asymptotic Approach for Nonlinear Topology Optimization Considering Plasticity with the Drucker – Prager Model</td>
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<td>Tuo Zhao, Adelido Ramos Jr., Eduardo Lages, Glaucio Paulino</td>
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<tr>
<td>15:20</td>
<td>459</td>
<td>Hiroya Hoshiba (Tohoku University, Japan)</td>
<td>Topology optimization considering large elastoplastic deformation with kinematic hardening behavior</td>
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<td>Hiroya Hoshiba, Junji Kato</td>
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### Optimization with emphasis on particular physics model

**Including fluid simulation**

**Chair:** Nozomo Kogiso (Osaka Prefecture University, Japan)

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<tr>
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<td>27</td>
<td>Zheng Li (Dalian University of Technology, China)</td>
<td>Topology Optimization for the Design of Conformal Cooling System in Thin-wall Injection Molding Based on BEM</td>
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<td>Zheng Li</td>
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<td>14:20</td>
<td>162</td>
<td>Casper Schousboe Andreasen (Technical University of Denmark, Denmark)</td>
<td>Topology optimization of active transport fluid problems</td>
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<td>Casper Schousboe Andreasen</td>
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<td>14:40</td>
<td>221</td>
<td>Cong Chen (Kyoto University, Japan)</td>
<td>Topology optimization of periodic flows using the local-in-time method and the lattice Boltzmann method</td>
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<td>Cong Chen, Kentaro Yaji, Takayuki Yamada, Kazuhiro Izui, Shinji Nishiwaki</td>
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<td>15:00</td>
<td>235</td>
<td>Ricardo Amigo (Imperial College London, UK)</td>
<td>Design of Adsorbed Natural Gas Tanks with Metallic Inclusions by Topology Optimisation</td>
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<td>Ricardo Amigo, Robert Hewson, Emilio Silva</td>
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<td>15:20</td>
<td>405</td>
<td>Kentaro Yaji (Osaka University, Japan)</td>
<td>Optimum channel design of a redox flow battery via topology optimization</td>
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<td>Kentaro Yaji, Shintaro Yamasaki, Shohji Tsushima, Takahiro Suzuki, Kikuo Fujita</td>
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### Session 3

**Monday, 5th June 2017**

**16:20 – 18:00**

**Room:** PK 4.1

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<tr>
<td>16:20</td>
<td>209</td>
<td>Julien Pelamatti (ONERA, France)</td>
<td>How to deal with discrete variables in integrated MDO framework: an overview of optimization algorithms and MDO formulations</td>
</tr>
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<td>16:20</td>
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<td>Julie Pelamatti, Loic Brevault, Mathieu Balesdent, El-Ghazali Talibi, Yannick Guerin</td>
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<td>16:40</td>
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<td>Saeed Azad, Mohammad Sh. Behtash, Arian Housmand, Michael Alexander-Ramos</td>
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<td>17:00</td>
<td>238</td>
<td>Shamsheer Chauhan (University of Michigan, USA)</td>
<td>Comparison between block Gauss-Seidel and Newton approaches for the solution of complex multidisciplinary systems</td>
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<td>Shamsheer Chauhan, John Hwang, Joaquin Martins</td>
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<tr>
<td>17:20</td>
<td>369</td>
<td>Namwoo Kang (KAIST, South Korea)</td>
<td>Convergence Strategy for Parallel Solving of Analytical Target Cascading with Augmented Lagrangian Coordination</td>
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<td>Yongsu Jung, Namwoo Kang, Ikjin Lee</td>
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<td>17:40</td>
<td>491</td>
<td>Tzu Kang Lin (National Chiao Tung University, Taiwan)</td>
<td>Development of a bi-gradation semi-active isolation system with leverage-type controllable friction damper</td>
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<td>Zhen-Yu Zhan, Tzu Kang Lin</td>
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**Room:** PK 4.3

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<tr>
<td>16:20</td>
<td>125</td>
<td>Carlo Boursier Niutta (Politecnico di Torino, Italy)</td>
<td>Surrogate modeling in the design optimization of structures with discontinuous responses with respect to the design variables – A new approach to crashworthiness design</td>
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<td>16:20</td>
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<td>Carlo Boursier Niutta, Erich Josef Wehrle, Fabian Duddeck, Giovanni Belingardi</td>
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<td>16:40</td>
<td>154</td>
<td>Xin Li (Beijing Institute of Technology, China)</td>
<td>RBF-based High Dimensional Model Representation Method Using Proportional Sampling Strategy</td>
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<td>Xin Li, Teng Long, G. Gary Wang, Renhe Shi</td>
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<td>17:00</td>
<td>436</td>
<td>Marco Tito Bordogna (ONERA, France)</td>
<td>Surrogate-based Aeroelastic Optimization for Winglet Planform Design</td>
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<td>Marco Tito Bordogna, Dimitri Betteghor, Christophe Blondeau, Roeland De Breuker</td>
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<td>17:20</td>
<td>497</td>
<td>Ayat Honaramooz (RWTH Aachen, Germany)</td>
<td>A surrogate-based optimization using polynomial response surface in collaboration with population-based Evolutionary Algorithm</td>
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<td>Shima Rahmani, Masoud Ebrahimi, Ayat Honaramooz</td>
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<td>17:40</td>
<td>515</td>
<td>Tariq Benamara (Cenaero ASBL, Belgium)</td>
<td>Multi-fidelity extension to non-intrusive Proper Orthogonal Decomposition models and dedicated surrogate based optimization methodology</td>
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<td>Tariq Benamara, Piotr Breitkopf, Ingrid Lepot, Caroline Sainvitu</td>
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**Chair:** James Guest (John Hopkins University, USA)

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<td>475</td>
<td>Jihong Zhu</td>
<td>Integrated layout and topology optimization design</td>
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<td>(Northwestern Polytechnical University, China)</td>
<td>Jihong Zhu, Weihong Zhang</td>
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<td>78</td>
<td>Neung Hwan Yim</td>
<td>Topology optimization of planar linkage mechanisms involving gear components</td>
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<td>(Seoul National University, South Korea)</td>
<td>Neung Hwan Yim, Seok Won Kang, Yoon Young Kim</td>
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<td>190</td>
<td>Seth Watts</td>
<td>Optimal designs with optimal materials</td>
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<td>(Lawrence Livermore National Laboratory, USA)</td>
<td>Seth Watts, Daniel Tortorelli</td>
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<td>17:20</td>
<td>323</td>
<td>Pedro Coelho</td>
<td>Stress analysis and lay-out optimization of composite materials with periodic microstructures</td>
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<td>(UNIDE-M-FCT-UNL, Portugal)</td>
<td>Pedro Coelho, José Guedes, Hélder Rodrigues, João Cardoso</td>
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<td>431</td>
<td>Yakov Zelickman</td>
<td>Topology optimization with stress constraints using isotropic damage with strain softening</td>
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<td>(Technion - Israel Institute of Technology, Israel)</td>
<td>Yakov Zelickman, Oded Amir</td>
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### Room: SN 19.2

**Chair:** Mathias Stolpe (Technical University of Denmark, Denmark)

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<td>16:20</td>
<td>344</td>
<td>Carolina Jauregui</td>
<td>Fast level set topology optimization using a hierarchical data structure</td>
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<td>(UC San Diego, USA)</td>
<td>Carolina Jauregui, Alicia Kim</td>
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<td>16:40</td>
<td>352</td>
<td>Renato Picelli</td>
<td>Microscale stress topology optimisation using the level set method</td>
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<td>(Cardiff University, UK)</td>
<td>Renato Picelli, Raghavendra Sivapuram, Scott Townsend, H. Alicia Kim</td>
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<tr>
<td>17:00</td>
<td>509</td>
<td>Hélio Emmendoerfer Junior</td>
<td>Level set topology optimization for design-dependent pressure load problems</td>
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<td>(University of Sao Paulo, Brazil)</td>
<td>Hélio Emmendoerfer Junior, Eduardo Alberto Fancelllo, Emilio Carlos Nelli Silva</td>
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<tr>
<td>17:20</td>
<td>510</td>
<td>Eduardo Alberto Fancelllo</td>
<td>Stress-constrained level set topology optimization for design-dependent pressure load problems</td>
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<td>(Federal University of Santa Catarina, Brazil)</td>
<td>Hélio Emmendoerfer Junior, Emilio Carlos Nelli Silva, Eduardo Alberto Fancelllo</td>
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<td>17:40</td>
<td>417</td>
<td>Peng Wei</td>
<td>Parameterized level set-based topology optimization considering symmetry and pattern repetition constraints</td>
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<td>(South China University of Technology, China)</td>
<td>Peng Wei, Zuyu Li</td>
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</table>
### Chair: Schalk Kok (University of Pretoria, South Africa)

#### Optimization with emphasis on particular physics model

<table>
<thead>
<tr>
<th>Time</th>
<th>ID</th>
<th>Presenting Author</th>
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<tbody>
<tr>
<td>16:20</td>
<td>131</td>
<td>Naoko Ishizuka (IHI Corporation, Japan)</td>
<td>Topology optimization for unifying deposit thickness in electroplating process</td>
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<td>Naoko Ishizuka, Takayuki Yamada, Shinji Nishiwaki</td>
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<tr>
<td>16:40</td>
<td>242</td>
<td>Yuqing Zhou (University of Michigan, USA)</td>
<td>Gradient-Based Multi-Component Topology Optimization of Sheet Metal Structures with Stamping Die Cost Manufacturing Constraint</td>
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<td>Yuqing Zhou, Kazuhiro Saitou</td>
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<tr>
<td>17:00</td>
<td>265</td>
<td>Dirk Munro (TU Delft, The Netherlands)</td>
<td>Topology optimization with manufacturing process simulation-based constraints</td>
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<td>Dirk Munro, Can Ayas, Matthijs Langelaar, Fred van Keulen</td>
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<td>17:20</td>
<td>456</td>
<td>Hak Yong Lee (Johns Hopkins University, USA)</td>
<td>Design of 3D Woven Materials for Enhanced Dynamic Properties</td>
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<td>Hak Yong Lee, David Mills, Timothy Weihs, Kevin Hemker, James Guest</td>
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<tr>
<td>17:40</td>
<td>462</td>
<td>Saranthip Koh (Johns Hopkins University, USA)</td>
<td>Topology optimization of components and embedded reinforcements using discrete object projection</td>
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<td>Saranthip Koh, James K. Guest</td>
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### Chair: Niels Leergaard Pedersen (Technical University of Denmark, Denmark)

#### Optimization with emphasis on particular physics model

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<tr>
<th>Time</th>
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<th>Presenting Author</th>
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<tbody>
<tr>
<td>16:20</td>
<td>415</td>
<td>Cao Niu (Northwestern Polytechnical University, China)</td>
<td>Shape optimization for frictional contact problems using semi-analytical sensitivity analysis and its application to design of an aero-engine turbine component</td>
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<td>Cao Niu, Weihong Zhang</td>
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<td>16:40</td>
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<td>Daniel Billenstein (University of Bayreuth, Germany)</td>
<td>Investigation of contact settings on the result of topology optimization to avoid contact stiffness supports</td>
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<td>Daniel Billenstein, Christian Glenk, Pascal Diwisch, Frank Rieg</td>
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<tr>
<td>17:00</td>
<td>397</td>
<td>Kurt Maute (University of Colorado Boulder, USA)</td>
<td>Level-Set Topology Optimization of Large Deformation Dynamic Contact Problems</td>
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<td>Kurt Maute, Matthew Lawry</td>
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<tr>
<td>17:20</td>
<td>400</td>
<td>Hazem Madah (Technion, Israel Institute of Technology, Israel)</td>
<td>Optimal design of skeletal structures exhibiting nonlinear response</td>
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<td>Hazem Madah, Oded Amir</td>
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<td>17:40</td>
<td>345</td>
<td>Peng Hao (Dalian University of Technology, China)</td>
<td>Fast Procedure for the Optimization of Stiffened Shells with Cutouts Reinforced by Curvilinearly Stiffeners</td>
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<td>Peng Hao, Yangfan Li, Kuo Tian, Bo Wang</td>
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## General approaches and strategies

### Multi-disciplinary optimization 4

**Chair:** Pascal Etman (Technische Universiteit Eindhoven, Netherlands)

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<th>Time</th>
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<tbody>
<tr>
<td>09:00</td>
<td>148</td>
<td>Bin Yuan</td>
<td>Efficient Global Optimization Strategy Considering Expensive Constraints</td>
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<tr>
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<td>(Beijing Institute of Technology, China)</td>
<td>Bin Yuan, Li Liu, Teng Long, RenHe Shi</td>
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<tr>
<td>09:20</td>
<td>271</td>
<td>Christian Lundgaard</td>
<td>Topology optimization for fluid-structure-interaction problems</td>
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<td>(Technical University of Denmark, Denmark)</td>
<td>Christian Lundgaard, Joe Alexandersen, Casper Schousboe Andreassen, Mingdong Zhou, Ole Sigmund</td>
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<tr>
<td>09:40</td>
<td>370</td>
<td>Joung Taek Yoon</td>
<td>A New Resilience-Driven System Design Considering False Alarms</td>
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<td>(Seoul National University, Republic of Korea)</td>
<td>Joung Taek Yoon, Minji Yoo, Byeng D. Youn, Yunhan Kim</td>
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<tr>
<td>10:00</td>
<td>198</td>
<td>Kirill Balunov</td>
<td>Bi-level approach to structural optimization of aircraft wing with stress and flutter constraints</td>
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<td>(TsAGI, Russia)</td>
<td>Kirill Balunov, Vasily Chedrik</td>
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<tr>
<td>10:20</td>
<td>12</td>
<td>Mingdong Zhou</td>
<td>Shape Optimization of Fully Stressed Design and Channel Flow Problems by Explicit Boundary Tracking</td>
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<td>(Shanghai Jiao Tong University, China)</td>
<td>Mingdong Zhou, Haojie Lian, Niels Aage, Ole Sigmund</td>
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</tbody>
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### Room: PK 4.1

## Session 4

**Tuesday, 6th June 2017**

9:00 – 10:40

**Chair:** Bo Wang (Dalian University of Technology, China)

### Geometry modelling aspects 1

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<tr>
<th>Time</th>
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<tr>
<td>09:00</td>
<td>65</td>
<td>Peter M. Clausen</td>
<td>CAD-reconstruction of non-parametric optimizations</td>
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<td>(Dassault Systèmes Deutschland, Germany)</td>
<td>Peter M. Clausen, Arnaud Deslandes, Claire Fritz-Humblot</td>
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<tr>
<td>09:20</td>
<td>164</td>
<td>Daniel Baumgärtner</td>
<td>Integration of node-based shape optimization in computer-aided design workflows</td>
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<tr>
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<td></td>
<td>(Technical University of Munich, Germany)</td>
<td>Daniel Baumgärtner, Armin Geiser, Kai-Uwe Bletzinger</td>
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<tr>
<td>09:40</td>
<td>240</td>
<td>Armin Geiser</td>
<td>Assessment of filter properties and the numerical treatment in context of Vertex Morphing.</td>
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<td>(Technical University of Munich, Germany)</td>
<td>Armin Geiser, Daniel Baumgärtner, Roland Wüchner, Kai-Uwe Bletzinger</td>
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<tr>
<td>10:00</td>
<td>474</td>
<td>Malte Woidt</td>
<td>Topology optimization of incompatible isogeometric stiffened structures using evolutionary algorithms</td>
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<td>(TU Braunschweig, Germany)</td>
<td>Malte Woidt, Kay Sommerwerk, Matthias Haupts, Peter Horst</td>
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<td>10:20</td>
<td>500</td>
<td>Reinier van Dijk</td>
<td>ParaPy: a Knowledge Based Engineering Framework built on Python</td>
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<td>(ParaPy B.V., The Netherlands)</td>
<td>Reinier van Dijk, Bram Timmer</td>
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</table>
### Structural optimization
Fibers and composites optimization 3

**Chair:** Helder Rodrigues (Universidade de Lisboa, Portugal)

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<thead>
<tr>
<th>Time</th>
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<th>Presenting Author</th>
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<tbody>
<tr>
<td>09:00</td>
<td>35</td>
<td>Erik Lund</td>
<td>On penalization strategies for failure indices in Discrete Material and Thickness Optimization problems</td>
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<td>(Aalborg University, Denmark)</td>
<td>Erik Lund</td>
</tr>
<tr>
<td>09:20</td>
<td>97</td>
<td>Gareth Vio</td>
<td>Dealing with probabilistic uncertainty in aeroelastic composite optimisation using Random Matrix Theory</td>
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<td>(University of Sydney, Australia)</td>
<td>Aditya Vishwanathan, Gareth Vio, David Munk</td>
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<tr>
<td>09:40</td>
<td>256</td>
<td>Sascha Dähne</td>
<td>Gradient based structural optimization of a stringer stiffened composite wing box with variable stringer orientation</td>
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<td>(German Aerospace Center, Germany)</td>
<td>Sascha Dähne, Christian Hühne</td>
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<tr>
<td>10:00</td>
<td>283</td>
<td>Elin Andersen</td>
<td>The concept of Free Beam Section Optimization</td>
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<tr>
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<td>(University of Stavanger, Norway)</td>
<td>Elin Andersen, José Pedro Blasques, Alemseged Gebrehiwot Weldeyesus, Mathias Stolpe</td>
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<tr>
<td>10:20</td>
<td>229</td>
<td>Zhi Sun</td>
<td>Bionic sandwich structures design with hybrid core based on topological optimization under multiple constraints</td>
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<td>(Dalian University of Technology, China)</td>
<td>Dong Li, Zhi Sun, Weisheng Zhang, Shanshan Shi, Haoran Chen, Xu Guo</td>
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### Structural optimization
Topography optimization with density methods 4

**Chair:** Claus Pedersen (Dassault Systèmes)

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<tr>
<td>09:00</td>
<td>110</td>
<td>Narindra Ranalvomiarana</td>
<td>Simultaneous topology optimization of material density and anisotropy</td>
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<td>(Onera, France)</td>
<td>Narindra Ranalvomiarana, François-Xavier Irissar, Dimitri Bettebghor, Boris Desmorat</td>
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<tr>
<td>09:20</td>
<td>136</td>
<td>Kazem Ghabraie</td>
<td>A simple approach to deal with zero densities in topology optimisation</td>
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<td>(Deakin University, Australia)</td>
<td>Kazem Ghabraie</td>
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<td>09:40</td>
<td>140</td>
<td>Wares Chancharoen</td>
<td>Topology Optimization of Density Type for Linear Elastic Body Using the Second Derivative of KS function with Respect to the von Mises Stress</td>
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<td>(Nagoya University, Japan)</td>
<td>Wares Chancharoen, Hideyuki Azegami</td>
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<tr>
<td>10:00</td>
<td>158</td>
<td>Max van der Kolk</td>
<td>Using exact particular solutions and modal reduction in topology optimization of transient thermo-mechanical problems.</td>
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<td>(Delft University of Technology, The Netherlands)</td>
<td>Max van der Kolk, Matthijs Langelaar, Fred van Keulen</td>
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<td>10:20</td>
<td>260</td>
<td>Lise Noël</td>
<td>Designing metamaterials for enhanced noise and vibration properties</td>
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<td>(KU Leuven, Belgium)</td>
<td>Lise Noël, Claus Claey, Elke Decker, Wim Desmet</td>
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### Structural optimization
Topography optimization with level set methods 4 (additive manufacturing)

**Chair:** Kurt Maute (University of Colorado, USA)

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<tr>
<td>09:00</td>
<td>255</td>
<td>Grégoire Allaire</td>
<td>A model of layer by layer mechanical constraint for additive manufacturing in shape and topology optimization</td>
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<td>(CMAP, Ecole Polytechnique, France)</td>
<td>Grégoire Allaire, Charles Dapogny, Alexis Faure, Georgios Michailidis</td>
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<tr>
<td>09:20</td>
<td>207</td>
<td>Lukas Jakabcin</td>
<td>Topology optimization of structures by the level set method taking into account thermal residual stresses induced by additive manufacturing.</td>
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<td>Lukas Jakabcin, Grégoire Allaire</td>
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<td>09:40</td>
<td>299</td>
<td>Xu Guo</td>
<td>Self-supporting structure design in additive manufacturing through Moving Morphable Component/Void (MMC/MMV) based explicit topology optimization</td>
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<td>(Dalian University of Technology, China)</td>
<td>Xu Guo, Jianhua Zhou, Weisheng Zhang</td>
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<td>10:00</td>
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<td>Weisheng Zhang</td>
<td>Explicit three dimensional topology optimization via Moving Morphable Component/Void (MMC/MMV) approach</td>
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<td>Weisheng Zhang, Jishun Chen, Xu Guo</td>
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<td>10:20</td>
<td>301</td>
<td>Chang Liu</td>
<td>A new approach for designing graded lattice/porous structures based on Moving Morphable Component/Void (MMC/MMV) topology optimization framework</td>
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<td>(Dalian University of Technology, China)</td>
<td>Chang Liu, Weisheng Zhang, Xu Guo</td>
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<td>09:00</td>
<td>51</td>
<td>Daniel Cunha</td>
<td>Evolutionary topology optimization of geometrically nonlinear structures under topology dependent loads</td>
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<td>(State University of Campinas, Brazil)</td>
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<tr>
<td>09:20</td>
<td>83</td>
<td>Cheol Kim</td>
<td>Topology Optimization of a Box-beam Structure Considering Crash Loadings and Rate-dependent Nonlinear Material Behaviors and Using Equivalent Static Loads</td>
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<td>(Kyungpook National University, South Korea)</td>
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<td>09:40</td>
<td>132</td>
<td>Daniel Tortorelli</td>
<td>Optimization of periodic cells for nonlinear response</td>
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<td>(Lawrence Livermore National Laboratory, USA)</td>
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<td>10:00</td>
<td>338</td>
<td>Jorge Barrera Cruz</td>
<td>Topology Optimization of Elastomeric Gels with Internal State Variable Dependencies in the Sensitivity Analysis</td>
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<tr>
<td>10:20</td>
<td>57</td>
<td>Yangjun Luo</td>
<td>Layout optimization of cable-suspended membrane structures for wrinkle-free design</td>
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<tr>
<td>09:00</td>
<td>37</td>
<td>Andres Tovar</td>
<td>Multiscale, thermomechanical topology optimization of cellular structures for porous injection molds</td>
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<td>(Indiana University-Purdue, University Indianapolis, USA)</td>
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<td>163</td>
<td>Yuki Sato</td>
<td>A fictitious physical model-based geometrical constraint in topology optimization for molding and milling</td>
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<tr>
<td>09:40</td>
<td>182</td>
<td>Riccardo Cenni</td>
<td>Multidisciplinary shape optimization of ductile iron castings by considering local microstructure and material behaviour</td>
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<tr>
<td>10:00</td>
<td>191</td>
<td>Thilo Franke</td>
<td>Topology optimization with integrated casting simulation and parallel manufacturing process improvement</td>
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<td>(Volkswagen AG, Germany)</td>
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<tr>
<td>10:20</td>
<td>353</td>
<td>Quhao Li</td>
<td>Virtual-Temperature-Method Based Formulation of Topology Optimization for Design of Cast Parts</td>
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## Session 5

**Tuesday, 6th June 2017**

10:20 – 13:00

### Room: PK 4.1

**Chair:** Axel Schumacher (Bergische Universität Wuppertal, Germany)

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| 11:20 | 107 | **David Munk**  
 (The University of Sydney, Australia) | Producing smart Pareto sets for multi-objective topology optimization problems              |
| 11:40 | 129 | **Łukasz Jankowski**  
 (Polish Academy of Sciences, Poland) | Multicritical optimization of geometrical and structural properties of the basic module for a single-branch Truss-Z structure |
| 12:00 | 455 | **Namhee Ryu**  
 (Hanyang University, South Korea) | Multi-objective Optimization Using Adaptive Weight Determination Scheme Based on Concept of Hyperplane |
| 12:20 | 505 | **Andrew Gaynor**  
 (U.S. Army Research Laboratory, USA) | Topology Optimization for the design of Structural Capacitors: Light-Weighting Unmanned Autonomous Systems |

### Room: PK 4.3

**Chair:** Kai-Uwe Bletzinger (TU München, Germany)

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<th>Time</th>
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<th>Presenting Author</th>
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</table>
| 11:20 | 17  | **Daniel White**  
 (LLNL, USA) | Topological Optimization in Fourier Space                                                   |
| 11:40 | 79  | **Nick Stoppelkamp**  
 (Dassault Systèmes Deutschland GmbH, Germany) | Concepts to couple CAD and non-parametric shape optimization                                |
| 12:00 | 87  | **Michael Werner**  
 (Dassault Systèmes Deutschland GmbH, Germany) | A Platform Approach for Topology Optimization to Overcome the Gap between Geometry and Simulation |
| 12:20 | 120 | **Deepak Gupta**  
 (Delft University of Technology, The Netherlands) | Numerical artefacts in topology optimization approaches involving decoupled analysis and design discretizations |
| 12:40 | 214 | **Kengo Uehara**  
 (Osaka Prefecture University, Japan) | Optimum morphing shape design for morphing wing with corrugated structure using RBF network |
### Structural optimization
#### Fibers and composites optimization 4
**Chair: Niels Olhoff (Aalborg University, Denmark)**

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<tr>
<td>11:20</td>
<td>64</td>
<td>Matteo Bruggi (Politecnico di Milano, Italy)</td>
<td>Optimal design of the fiber-reinforcement of no-tension masonry walls Matteo Bruggi, Alberto Taliercio</td>
</tr>
<tr>
<td>11:40</td>
<td>75</td>
<td>Yoshiaki Muramatsu (Toyota Technological Institute, Japan)</td>
<td>Optimization approach for free-orientation of a laminated shell structure with orthotropic material Yoshiaki Muramatsu, Masatoshi Shimoda</td>
</tr>
<tr>
<td>12:00</td>
<td>108</td>
<td>Tobias Bach (DLR - German Aerospace Center, Germany)</td>
<td>Structural optimization of stiffened composite panels for highly flexible aircraft wings Tobias Bach</td>
</tr>
<tr>
<td>12:20</td>
<td>151</td>
<td>Mario Petrovic (Kyoto University, Japan)</td>
<td>Orthotropic Material Orientation Optimization and Manufacturing in Composite Structures Mario Petrovic, Tsuyoshi Nomura, Norio Tada, Takaaki Takahashi, Shinji Nishiwaki, Kazuhiro Izui</td>
</tr>
<tr>
<td>12:40</td>
<td>206</td>
<td>Felix Osplad (TU Chemnitz, Germany)</td>
<td>SIMP based Topology Optimization for Injection Molding of SFRPs Felix Osplad, Roland Herzog</td>
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### Structural optimization
#### Topology optimization with density methods 5
**Chair: Martin Bendsoe (Technical University of Denmark, Denmark)**

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<tbody>
<tr>
<td>11:20</td>
<td>155</td>
<td>Chung Hee Yoon (Hanyang University, South Korea)</td>
<td>A new topology optimization method for non-matching elements using variable node element Gil Ho Yoon, Chung Hee Yoon</td>
</tr>
<tr>
<td>11:40</td>
<td>171</td>
<td>Eddie Wadbro (Umeå University, Sweden)</td>
<td>On length scale control in topology optimization Eddie Wadbro, Linus Hägg</td>
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<tr>
<td>12:00</td>
<td>72</td>
<td>Alessandro Beghini (SOM, USA)</td>
<td>Optimal Tendon Layouts for Concrete Slabs in Buildings derived through Density-Based Topology Optimization Algorithms Mark Sarkisian, Eric Long, Alessandro Beghini, Rupa Garai, Ricardo Henoch, Abel Daz</td>
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<tr>
<td>12:20</td>
<td>244</td>
<td>David Weinberg (Autodesk Inc., USA)</td>
<td>Challenges in implementing topology optimization to established commercial software David Weinberg, Nam H. Kim</td>
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<tr>
<td>12:40</td>
<td>237</td>
<td>Janos Logo (Budapest University, Hungary)</td>
<td>Topology Optimization at the first half of the XX. century Janos Logo</td>
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</tbody>
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### Structural optimization
#### Topology optimization with other methods 1
**Chair: Fabian Wein (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)**

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<tr>
<td>11:20</td>
<td>20</td>
<td>Hao Xu (National University of Defense Technology, China)</td>
<td>Optimization and Design of Supporting Legs on TianTuo-3 Microsatellite Hao Xu, Yong Zhao, Wen Yao, Ning Wang, BingXiao Du</td>
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<td>11:40</td>
<td>76</td>
<td>Xuan Zhang (Kobe University, Japan)</td>
<td>Dynamic Behavior of Hanging Truss Having Shape Memory Alloy Wires (From the optimization viewpoint of vibration isolation and absorption) Xuan Zhang, Kazuyuki Hanahara, Yukio Tada</td>
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<td>12:00</td>
<td>98</td>
<td>Ke Liu (Georgia Institute of Technology, USA)</td>
<td>Tensegrity Topology Optimization by Force Maximization on Arbitrary Ground Structures Ke Liu, Glaucio H. Paulino</td>
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<td>12:20</td>
<td>218</td>
<td>Yuki Noguchi (Kyoto University, Japan)</td>
<td>Level set-based topology optimization for a soundproofing acoustic meta-surface using Zwikker’s loudness model Yuki Noguchi, Kohel Miyata, Takayuki Yamada, Kazuhiro Izui, Shinji Nishiwaki</td>
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<td>12:40</td>
<td>267</td>
<td>Monika Mazur (Cracow University of Technology, Poland)</td>
<td>A novel heuristic generator of structural topologies based on sorted compliances Monika Mazur, Katarzyna Tajs-Zielinska, Bogdan Bochenek</td>
</tr>
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## Room: SN 19.4

**Optimization with emphasis on particular physics model**

**Considering non-linear effects (e.g. material, geometric, contact)**

**Chair:** Daniel Tortorelli (Lawrence Livermore Natl. Lab, USA)

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<tr>
<td>11:20</td>
<td>25</td>
<td>Pauli Pedersen (Technical University of Denmark, DTU, Denmark)</td>
<td>Optimization of 3D bifurcation stability, Pauli Pedersen, Niels Leergaard Pedersen</td>
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<td>11:40</td>
<td>26</td>
<td>Niels Leergaard Pedersen (Technical University of Denmark, DTU, Denmark)</td>
<td>Optimization of bolted flanges, Niels Leergaard Pedersen</td>
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<td>12:00</td>
<td>121</td>
<td>David Ruiz (Universidad de Castilla-La Mancha, Spain)</td>
<td>Optimal design of robust piezoelectric unimorph microgripper under large displacement, David Ruiz, Ole Sigmund</td>
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<td>12:20</td>
<td>544</td>
<td>Niharika Gupta (Indian Institute of Science, India)</td>
<td>Optimization of Width-Profiles of Bistable Arches, Niharika Gupta, Safvan Palathingal, G.K. Ananthasuresh</td>
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<td>12:40</td>
<td>419</td>
<td>Haitao Ma (Guangzhou University, China)</td>
<td>An Adaptive Continuation Method for Structural Topology Optimization Considering Buckling Constraints, Xingjun Gao, Haitao Ma</td>
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## Room: SN 19.3

**Optimization with emphasis on particular physics model**

**Integration of material models (micro-/nano-structures)**

**Chair:** Jianbin Du (Tsinghua University, China)

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<td>11:20</td>
<td>33</td>
<td>Jin-Xing Shi (Toyota Technological Institute, Japan)</td>
<td>Shape and structural design optimization of graphene sheets in natural vibration problem, Jin-Xing Shi, Keiichiro Ohmura, Masatoshi Shimoda</td>
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<td>11:40</td>
<td>176</td>
<td>Byungseong Ahn (Seoul National University, South Korea)</td>
<td>Topology Optimization of Anisotropic Metamaterials to Realize the Desired EFC and Field Polarization, Byungseong Ahn, Hyung Jin Lee, Yoon Young Kim</td>
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<td>12:00</td>
<td>291</td>
<td>Liang Xu (Dalian University of Technology, China)</td>
<td>Two-scale concurrent topology optimization with multiple micro materials based on principal stress direction, Liang Xu, Gengdong Cheng</td>
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<td>12:20</td>
<td>437</td>
<td>Jung Jin Kim (KAIST, South Korea)</td>
<td>Resolution enhancement of 3-D quantitative computed tomography image for proximal femur by using analogy between topology optimization and phenomenological bone remodeling, Jung Jin Kim, In Gwun Jang</td>
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### Session 6
Tuesday, 6th June 2017
14:00 – 15:40

**Room: PK 4.1**

#### General approaches and strategies
Uncertainty and robust design 1

**Chair: Byeng Dong Youn (Seoul National University, Korea)**

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<td>14:00</td>
<td>114</td>
<td>Sang-Hyeon Choi (Korea Aerospace Research Institute, South Korea)</td>
<td>Improved sequential optimization and reliability assessment for reliability-based design optimization by Sang-Hyeon Choi and Ikjin Lee</td>
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<td>14:20</td>
<td>306</td>
<td>Christian Gogu (Universite Toulouse III, ICA, France)</td>
<td>Accelerating sampling based methods for reliability analysis through on the fly reduced order modeling by Christian Gogu, Anirban Chaudhuri, Christian Bes</td>
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<td>14:40</td>
<td>366</td>
<td>Makoto Ito (Osaka Prefecture University, Japan)</td>
<td>Conceptual design of displacement magnifying mechanism considering epistemic and aleatory uncertainty by Makoto Ito, Nozomu Kogiso</td>
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<td>15:00</td>
<td>411</td>
<td>Jaehyeok Doh (Yonsei University, Republic of Korea)</td>
<td>Reliability Based Design Optimization of The Gap Size of Annular Nuclear Fuels in Pressurized Water Reactor (PWR) by Jaehyeok Doh and Jongsoo Lee</td>
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<td>15:20</td>
<td>317</td>
<td>Yutian Wang (Dalian University of Technology, China)</td>
<td>Improved adaptive-loop method for non-probabilistic reliability-based design optimization by Yutian Wang, Peng Hao, Chen Liu, Fangzhou Wu, Bo Wang</td>
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### Room: PK 4.3

#### General approaches and strategies
Sensitivity analysis 1

**Chair: Franz-Joseph Barthold (TU Dortmund, Germany)**

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<td>339</td>
<td>Mauricio Aristizabal (Universidad EAFIT, Colombia)</td>
<td>An introduction to the OTI method to efficiently compute n-order derivatives by Mauricio Aristizabal, Manuel Garcia, Harry Millwater</td>
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<td>14:20</td>
<td>420</td>
<td>Hiroshi Isakari (Nagoya university, Japan)</td>
<td>A gradient-based topology optimisation for radar cross sections in two-dimensional acoustics by Hiroshi Isakari, Toru Takahashi, Toshiro Matsumoto</td>
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<td>14:40</td>
<td>426</td>
<td>Kenta Nakamoto (Nagoya University, Japan)</td>
<td>A topology optimisation of wave absorbers in two-dimentional electro-magnetic field with an accelerated BEM by the H-matrix method by Kenta Nakamoto, Hiroshi Isakari, Toru Takahashi, Toshiro Matsumoto</td>
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<td>15:00</td>
<td>527</td>
<td>David Sandler (Virginia Tech, USA)</td>
<td>Continuum Shape Sensitivity Analysis for Fluid-Structure Interaction using an Arbitrary Lagrangian-Eulerian Reference Frame by David Sandler and Robert Canfield</td>
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<td>15:20</td>
<td>545</td>
<td>Jan Liedmann (TU Dortmund, Germany)</td>
<td>Design Exploration based upon Internal Structure of Materially Nonlinear Response Sensitivities by Jan Liedmann and Franz-Joseph Barthold</td>
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### Structural optimization
#### Shape optimization 1

**Chair:** Michel H.J.W. Paas (Ford Motor Company, Germany)

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<td>449</td>
<td>Jaan Lellep</td>
<td>Optimization of stepped plates in the elastic plastic range</td>
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<td>(Tartu University, Estonia)</td>
<td>Jaan Lellep, Julia Polikarpus</td>
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<td>14:20</td>
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<td>Erin Kuci</td>
<td>Shape Optimization of Electric Drives based on the Lie Derivative</td>
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<td>(University of Liège, Belgium)</td>
<td>Erin Kuci, François Henrotte, Christophe Geuzaine, Pierre Duysinx</td>
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<td>14:40</td>
<td>532</td>
<td>Sierk Fiebig</td>
<td>Bead optimization with a Genetic Algorithm for reducing mechanical stresses in weldseams</td>
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<td>(Volkswagen AG, Germany)</td>
<td>Sierk Fiebig</td>
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<td>15:00</td>
<td>525</td>
<td>Daniel N. Wilke</td>
<td>Geometric design of SAG mill lifter bars utilizing the discrete element method</td>
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<td>(University of Pretoria, South Africa)</td>
<td>Daniel N. Wilke, Nicolin Govender, Patrick Pizette</td>
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<td>15:20</td>
<td>543</td>
<td>Safvan Palathingal</td>
<td>Optimization of Bistable Shallow-thin Shells without Pre-stress</td>
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<td>(Indian Institute of Science, India)</td>
<td>Safvan Palathingal, G. K. Ananthasuresh</td>
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### Structural optimization
#### Topology optimization with density methods 6

**Chair:** Michael Stingl (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)

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<tr>
<td>14:00</td>
<td>432</td>
<td>Emad Shakour</td>
<td>Simultaneous shape and topology optimization of prestressed concrete beams</td>
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<td>(Technion - Israel Institute of Technology, Israel)</td>
<td>Emad Shakour, Oded Amir</td>
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<td>14:20</td>
<td>457</td>
<td>Guilian Yi</td>
<td>Phononic Band Gap Maximization for Broadband Energy Harvesting around A Target Driving Frequency</td>
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<td>(Seoul National University, South Korea)</td>
<td>Guilian Yi, Yong Chang Shin, Heonjun Yoon, Soo-Ho Jo, Byeng D. Youn</td>
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<td>14:40</td>
<td>434</td>
<td>Eduardo Fernández</td>
<td>Contributions to handle maximum size constraints in density-based topology optimization</td>
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<td>(University of Liège, Belgium)</td>
<td>Eduardo Fernández, Maxime Collet, Simon Bauduin, Etienne Lemaire, Pierre Duysinx</td>
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<td>15:00</td>
<td>471</td>
<td>Po Ting Lin</td>
<td>Investigation and Comparison of Alternative Material Property Models for Density-based Topology Optimization</td>
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<td>(National Twaiwan University of Science and Technology, Taiwan)</td>
<td>Mark Christian E. Manuel, Po Ting Lin</td>
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<td>15:20</td>
<td>19</td>
<td>Pingzhang Zhou</td>
<td>Topology optimization of freely vibrating continuum structures based on nonsmooth optimization</td>
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<td>(Tsinghua University, China)</td>
<td>Pingzhang Zhou, Jianbin Du, Zhenhua Lv</td>
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### Structural optimization
#### Topology optimization with other methods 2

**Chair:** Julian Norato (University of Connecticut, USA)

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<tr>
<td>14:00</td>
<td>24</td>
<td>Vu Truong Vu</td>
<td>Modifications of bi-directional evolutionary structural optimization for structure compliance</td>
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<td>(Ho Chi Minh City University of Transport, Vietnam)</td>
<td>Vu Truong Vu</td>
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<td>14:20</td>
<td>68</td>
<td>Tomasz Lewiński</td>
<td>Constrained versions of the free material design methods and their applications in 3D printing</td>
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<td>(Warsaw University of Technology, Poland)</td>
<td>Tomasz Lewiński, Sławomir Czarnecki, Radosław Czubacki, Tomasz Lukasi, Paweł Wawruch</td>
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<tr>
<td>14:40</td>
<td>113</td>
<td>Eilam Amir</td>
<td>Efficient High Resolution Topology Optimization using Beam Modeling</td>
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<td>(Technion, Israel)</td>
<td>Eilam Amir, Oded Amir</td>
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<td>15:00</td>
<td>146</td>
<td>Meisam Takalloozadeh</td>
<td>Designing Micro-structures with Negative Poisson’s Ratio by Utilizing Topological Derivative in MMC Framework</td>
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<td>(Hanyang University, South Korea)</td>
<td>Meisam Takalloozadeh, Gil Ho Yoon</td>
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<td>15:20</td>
<td>487</td>
<td>Akshay Desai</td>
<td>Optimal Topology of Heat-exchanging Fin using Topological Derivative</td>
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<td>(Indian Institute of Science, India)</td>
<td>Akshay Desai, G.K. Ananthasuresh</td>
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### Room: SN 19.4

**Chair:** Dong Wang (Northwestern Polytechnical University, China)

**Optimization with emphasis on particular physics model**

**Considering dynamic load-cases 1**

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<td>67</td>
<td>Jianbin Du (Tsinghua University, China)</td>
<td>Multi-objective topological design of support structure for active vibration isolation Pingzhang Zhou, Jianbin Du, Zhenhua Lv</td>
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<td>14:20</td>
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<td>Paolo Venini (University of Pavia, Italy)</td>
<td>Innovative norm-based approaches to optimization of dynamic systems Paolo Venini, Carlo Cinquini</td>
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<td>Susana Rojas Labanda (DTU Wind Energy, Denmark)</td>
<td>Simultaneous Analysis and Design formulation for sizing optimization problems under many dynamic loads Susana Rojas Labanda, Mathias Stolpe</td>
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<td>212</td>
<td>Niels Olhoff (Aalborg University, Denmark)</td>
<td>Topological Design of Vibro-Acoustic Structures using a Generalized Incremental Frequency Method Niels Olhoff, Jianbin Du</td>
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<td>15:20</td>
<td>506</td>
<td>Narayanan Pagaldipiti (Altair Engineering, USA)</td>
<td>Sensitivity Analysis of Eigenvectors, Response Spectrum Displacements and Stresses Narayanan Pagaldipiti, Shaobin Liu, Xueyong Qu, Raphael Fleury</td>
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### Room: SN 19.3

**Chair:** Alberto Donoso (Universidad de Castilla-La Mancha, Spain)

**Optimization with emphasis on particular physics model**

**Considering piezoelectricity, magnetic and electrical fields**

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<td>Johannes Semmler (Universitaet Erlangen-Nuernberg, Germany)</td>
<td>Material Optimization in Transverse Electromagnetic Applications Johannes Semmler, Lukas Pflug, Michael Stingl</td>
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<td>14:20</td>
<td>309</td>
<td>Jayachandran K P (University of Lisbon, Portugal)</td>
<td>Enhanced coupling in magnetoelectric composites by material design Jayachandran K P, Jose Guedes, Helder Rodrigues</td>
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<td>Hiroki Bo (Osaka University, Japan)</td>
<td>Conductor layout optimization for reducing the magnetic coupling noise of a filter circuit board Hiroki Bo, Shintaro Yamasaki, Kentaro Yaji, Katsuya Nomura, Atsuhiro Takahashi, Kikuo Fujita</td>
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<td>15:20</td>
<td>418</td>
<td>Shun Maruyama (Osaka university, Japan)</td>
<td>Integrated design of permanent magnet synchronous motor by incorporating magnet layout and yoke topology optimizations Shun Maruyama, Shintaro Yamasaki, Kentaro Yaji, Kikuo Fujita</td>
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### Session 7

**Wednesday, 7th June 2017**

**9:00 – 10:40**

**Room:** PK 4.1

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<td>Huile Zhang (Hunan University, China)</td>
<td>Multi-objective reliability-based design optimization for vehicle structures coupled process-performance</td>
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<td>Huile Zhang, Guangyong Sun, Guangyao Li, Qing Li</td>
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<td>231</td>
<td>Nam H. Kim (University of Florida, USA)</td>
<td>Optimization with Bayesian Network by changing design and epistemic variables</td>
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<td>Sangjune Bae, Nam H. Kim, Seung-gyo Jang</td>
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<td>09:40</td>
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<td>Guesuk Lee (Seoul National University, Republic of Korea)</td>
<td>A Comprehensive Study of Calibration Metrics for Optimization-Based Model Calibration</td>
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<td>Guesuk Lee, Guilian Yi, Byeng D. Youn</td>
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<td>10:00</td>
<td>517</td>
<td>Geoffrey Oxberry (Lawrence Livermore National Laboratory, USA)</td>
<td>Average-worst-case topology optimization using stochastic programming and Conditional Value-at-Risk</td>
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<td>Geoffrey Oxberry, Cosmin Petra, Mark Stowell, Andrew Barker, Dan White, Dan Tortorelli</td>
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<td>Gang Li (Dalian University of Technology, China)</td>
<td>An evolution-gradient based hybrid reliability analysis method by MOEA/D and ACC</td>
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<td>Claus B.W. Pedersen (Dassault Systemes SIMULIA, Germany)</td>
<td>Latest Developments for Industrial Adjoint Sensitivity Analysis and Non-Parametric Optimization</td>
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<td>Claus B.W. Pedersen, Kingshuk Bose, Michael Wood, Vladimir Belsky</td>
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<td>09:20</td>
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<td>José Carlos Bellido (Universidad de Castilla-La Mancha, Spain)</td>
<td>Eigenmode optimization revisited</td>
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<td>José Carlos Bellido, David Ruiz, Alberto Donoso</td>
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<td>Franz-Joseph Barthold (TU Dortmund, Germany)</td>
<td>A modified extended finite element method applied to control interfaces and cracks</td>
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<td>Franz-Joseph Barthold, Felix Ermen</td>
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<td>Timothée Achard (ONERA, France)</td>
<td>High-Fidelity Aero-Structure Gradient Computation Technique with application to the CRM Wing Design</td>
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<td>Timothée Achard, Christophe Blondeau, Roger Ohayon</td>
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<td>Qi Xia (Huazhong University of Science and Technology, China)</td>
<td>Sensitivity analysis through constrained variational principle and its application in optimization of thermal actuator</td>
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<td>Qi Xia, Tielin Shi</td>
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### Structural optimization

#### Chair: Daniel Tortorelli (Lawrence Livermore Natl. Lab, USA)

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<td>58</td>
<td>Mamoru Wakasa (Toyo Technological Institute, Japan)</td>
<td>Shape Optimization of Shell Structure For Controlling Transient Response Mamoru Wakasa, Masatoshi Shimoda</td>
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<tr>
<td>09:20</td>
<td>179</td>
<td>Anders Bernland (Umeå University, Sweden)</td>
<td>Level Set Based Shape Optimization using Cut Finite Elements in Acoustics Anders Bernland, Eddie Wadbro, Martin Berggren</td>
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<td>09:40</td>
<td>234</td>
<td>Eduard Rohan (University of West Bohemia, Czech Republic)</td>
<td>Shape optimization for microstructure design of porous materials described by the Biot model in the homogenization framework Eduard Rohan, Daniel Huebner, Vladimir Lukes, Michael Stingl</td>
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<td>10:00</td>
<td>239</td>
<td>Wojciech Kijanski (TU Dortmund, Germany)</td>
<td>Design of micro-structures using methods from shape optimisation Wojciech Kijanski, Franz-Joseph Barthold</td>
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<td>10:20</td>
<td>9</td>
<td>Ming Li (Dalian University of Technology, China)</td>
<td>Spline-based design optimization of fir-tree root in turbine structures Ming Li, Fengwei Li, Deqi Yu</td>
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### Structural optimization

#### Chair: Xiaoping Qian (UW-Madison, USA)

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<td>09:00</td>
<td>81</td>
<td>Anders Klarbring (Linköping University, Sweden)</td>
<td>On a Nash game formulation for robust structural optimization and its numerical solution using a decomposition method Henrik Alm Grundström, Carl-Johan Thore, Anders Klarbring</td>
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<td>09:20</td>
<td>143</td>
<td>Jong Wook Lee (Hanyang University, Seoul, Korea)</td>
<td>Topology optimization method for the laminate structure using the layerwise theory Jong Wook Lee, Gil Ho Yoon</td>
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<td>09:40</td>
<td>486</td>
<td>Josephine Carstensen (Johns Hopkins University, USA)</td>
<td>Multi-Material Topology Optimization of Periodic Cellular Materials Josephine Carstensen, James Guest</td>
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<td>10:00</td>
<td>495</td>
<td>Andrzej Myśliński ( Systems Research Institute, Poland)</td>
<td>Multimaterial Topology Optimization of Contact Problems using Allen-Cahn Approach Andrzej Myśliński</td>
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<td>10:20</td>
<td>276</td>
<td>Jun Yan (Dalian University of Technology, China)</td>
<td>Stress-based multiscale topology optimization with self-adaptive cluster cells of lattice structure Jun Yan, Zhenchao Gao, Da Geng, Tao Yu</td>
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### Structural optimization

#### Chair: Mathias Wallin (Lund University, Sweden)

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<td>Vasily Chedrik (TsAGI, Russia)</td>
<td>Structural optimization based on stress constrained topology optimization Vasily Chedrik, Sergei Tuktarov</td>
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<td>199</td>
<td>Helen Fairclough (University of Sheffield, United Kingdom)</td>
<td>Layout Optimization of Frames in the Presence of Self-Weight: A New Formulation Helen Fairclough, Matthew Gilbert, Andy Tyas, Aleksey Pichugin</td>
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<td>09:40</td>
<td>222</td>
<td>Tomasz Lukasiak (Warsaw University of Technology, Poland)</td>
<td>Macroscopically isotropic and cubic-isotropic two-material periodic structures constructed by the inverse-homogenization method Tomasz Lukasiak</td>
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<td>251</td>
<td>Simone Coniglio (ICA/SAE-Supaoero/Airbus, France)</td>
<td>Pylon and engine mounts performance driven structural topology optimization Simone Coniglio, Christian Gogu, Rémi Amargier, Joseph Morlier</td>
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<td>10:20</td>
<td>508</td>
<td>Linwei He (University of Sheffield, United Kingdom)</td>
<td>Human-in-the-loop layout and geometry optimization of structures and components Linwei He, Matthew Gilbert, Tom Johnson, Chris Smith</td>
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<td>09:00</td>
<td>160</td>
<td>Niklas Ivarsson</td>
<td>Dynamic topology optimization based on finite strain visco-plasticity</td>
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<td>09:20</td>
<td>168</td>
<td>Marius Bierdel</td>
<td>Multidisciplinary Design Optimization of a Satellite Structure by Additive Manufacturing</td>
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<td>09:40</td>
<td>362</td>
<td>Jaesoon Jung</td>
<td>Optimal topology design of locally resonant metamaterial with plate-like resonator</td>
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<td>(Gwangju Institute of Science and Technology, South Korea)</td>
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<td>10:00</td>
<td>448</td>
<td>Bin Niu</td>
<td>Design optimization of tunable locally resonant elastic metamaterials</td>
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<td>10:20</td>
<td>438</td>
<td>Juhee Lim</td>
<td>Multi-objective robust design and evaluation of commercial vehicle components based on principal component analysis</td>
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<tr>
<td>09:00</td>
<td>133</td>
<td>Qiming Liu</td>
<td>Topology optimization of viscoelastic composite materials for macrostructures</td>
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<td>09:20</td>
<td>296</td>
<td>Fengwen Wang</td>
<td>Topology optimization in advanced wave problems</td>
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<td>(Technical University of Denmark, Denmark)</td>
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<td>09:40</td>
<td>393</td>
<td>Stefan Gavranovic</td>
<td>GPU-Based Topology Optimization for Thermoelastic Problems</td>
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<td>(Technical University of Munich, Germany)</td>
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<td>10:00</td>
<td>435</td>
<td>Scott Townsend</td>
<td>Optimum Designs for Plate-Like Aircraft Wings under Flutter Constraints</td>
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<td>(Cardiff University, UK)</td>
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<td>10:20</td>
<td>454</td>
<td>Sunghoon Lim</td>
<td>Design Optimization of the IPM Motor for Improving Torque Performance at a High Driving Temperature Using Circuit-Field Coupled Analysis</td>
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<td>(Hanyang University, Seoul, Korea)</td>
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## Session 8

**Wednesday, 7th June 2017**

**11:20 – 13:00**

### Chair: Grégoire Allaire (Ecole polytechnique, France)

#### Room: PK 4.4

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<tr>
<td>11:20</td>
<td>93</td>
<td>Xiaoping Qian</td>
<td>Isogeometric Shape Optimization on Triangulations&lt;br&gt;(UW-Madison, )&lt;br&gt;Cunfu Wang, Songtao Xia, Xilu Wang, Xiaoping Qian</td>
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<tr>
<td>11:40</td>
<td>52</td>
<td>Shinnosuke Fujita</td>
<td>Optimization Method for Creating Minimal Surface Discretized by Parametric Surface&lt;br&gt;(Tokyo Institute of Technology, Japan)&lt;br&gt;Shinnosuke Fujita, Yoshihiro Kanno, Makoto Ohsaki</td>
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<td>12:00</td>
<td>166</td>
<td>Stefan Riehl</td>
<td>On structural shape optimization using an embedding domain discretization technique&lt;br&gt;(FAU Erlangen-Nürnberg, Germany)&lt;br&gt;Stefan Riehl, Paul Steinmann</td>
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<td>12:20</td>
<td>173</td>
<td>Fabian Wein</td>
<td>Parametric Shape Optimization of Lattice Structures for Phononic Band Gaps&lt;br&gt;(University Erlangen-Nuernberg, Germany)&lt;br&gt;Fabian Wein, Michael Stingl</td>
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<td>12:40</td>
<td>192</td>
<td>Dong Wang</td>
<td>Layout Optimization for Stiffened Plates on a Simple Stiffener’s Modellation&lt;br&gt;(Northwestern Polytechnical University, China)&lt;br&gt;Dong Wang, Zhenghao Li</td>
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### Room: SN 19.1

#### Chair: Zhan Kang (Dalian University of Technology, China)

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<td>11:20</td>
<td>272</td>
<td>Alexander Held</td>
<td>Fully coupled topology optimization of flexible multibody systems with constraints&lt;br&gt;(Hamburg University of Technology, Germany)&lt;br&gt;Alexander Held, Thomas Kohlsche, Robert Seifried</td>
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<td>11:40</td>
<td>356</td>
<td>Gengdong Cheng</td>
<td>Topology optimization of damping layers in plate structures subject to impact loads for minimum residual vibration&lt;br&gt;(Dalian University of Technology, China)&lt;br&gt;Kun Yan, Gengdong Cheng</td>
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<td>386</td>
<td>Nicolò Pollini</td>
<td>Topology and sizing optimization of nonlinear viscous dampers and their supporting braces for the displacement control of yielding frame structures&lt;br&gt;(Technion – Israel Institute of Technology, Israel)&lt;br&gt;Nicolò Pollini, Oren Lavan, Oded Amir</td>
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<td>12:20</td>
<td>447</td>
<td>Yi Wu</td>
<td>Topology Optimization of Structure for Dynamic Property Considering Hybrid Uncertain Parameters&lt;br&gt;(Hunan University, China)&lt;br&gt;Yi Wu, Z.C. He, Eric Li</td>
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<td>12:40</td>
<td>481</td>
<td>Mariana Moretti</td>
<td>Design of a controlled piezoelectric positioner with vibration suppression by using TOM&lt;br&gt;(University of São Paulo, Brazil)&lt;br&gt;Mariana Moretti, Emilio Silva</td>
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### Room: SN 19.4

#### Chair: Thomas Vietor (Technische Universität Braunschweig, Germany)

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<td>56</td>
<td>Niels Aage</td>
<td>Topology optimization of electro-mechanical-acoustic micro devices&lt;br&gt;(Technical University of Denmark, Denmark)&lt;br&gt;Niels Aage, Anders Liljel Møller, Jakob Søndergaard Jensen</td>
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<td>147</td>
<td>Hideyuki Azegami</td>
<td>Shape Optimization for Bodies of Musical Instruments&lt;br&gt;(Nagoya University, Japan)&lt;br&gt;Takuya Hayashi, Hideyuki Azegami</td>
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<td>12:00</td>
<td>318</td>
<td>Gesche Fender</td>
<td>Multimodal Optimization of Auxiliary Objectives in Structural-Acoustic Problems to generate Local Coarse Models for Multifidelity Optimization.&lt;br&gt;(University of Munich, Germany)&lt;br&gt;Gesche Fender, Koushyar Komeilizadeh, Steffen Marburg, Fabian Duddeck</td>
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<td>12:20</td>
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<td>Rasmus Christansen</td>
<td>Design of Passive Acoustic Wave Shaping Devices and Their Experimental Validation&lt;br&gt;(Technical University of Denmark, Denmark)&lt;br&gt;Rasmus Christansen, Ole Sigmund, Efren Fernandez-Grande</td>
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<td>538</td>
<td>Sebastian Rothe</td>
<td>An approach to use the structural intensity for acoustical topology optimization&lt;br&gt;(TU Braunschweig, Germany)&lt;br&gt;Sebastian Rothe, Sabine Langer</td>
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### Session 9

**Wednesday, 7th June 2017**

**14:00 – 15:40**

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<th>Chair: Fred van Keulen (Delft University of Technology, Netherlands)</th>
<th>General approaches and strategies</th>
<th>General aspects of single-objective optimization 1</th>
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<td><strong>14:00</strong></td>
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<td>Fan Ye (State Key Lab. of Advanced Design and Manufacturing for Vehicle Body, China)</td>
<td>A novel local surrogate assisted global optimization method for high dimensional problem</td>
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<td><strong>14:20</strong></td>
<td>444</td>
<td>Hyunseok Oh (Gwangju Institute of Science and Technology, South Korea)</td>
<td>A Robust Metric in Optimization-based Approach for Statistical Model Calibration</td>
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<td><strong>14:40</strong></td>
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<td>Hu Wang (Hunan University, P.R.China)</td>
<td>A multi-grid reanalysis solver for expensive computational optimization</td>
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<td><strong>15:00</strong></td>
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<td>Kepeng Qiu (Northwestern Polytechnical University, P. R. China)</td>
<td>Optimal Design of Microwave Metamaterial Absorber (MMA)</td>
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<td><strong>15:20</strong></td>
<td>197</td>
<td>Albert Albers (Karlsruhe Institute of Technology, Germany)</td>
<td>Coupling of Computer-aided Methods: Supporting Product Developer during Embodiment Synthesis</td>
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### Room: PK 4.4  
**Optimization focusing on particular industrial applications**  
**Aircraft**

**Chair:** Charles Mortished (Altair Engineering, United Kingdom)

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<td>14:00</td>
<td>150</td>
<td>Bo Wang (Dalian University of Technology, China)</td>
<td>On fast design of innovative hierarchical stiffened shells against imperfections</td>
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<td>Kuo Tian, Bo Wang</td>
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<td>14:20</td>
<td>246</td>
<td>Maxim Tyau (Konkuk University, Korea)</td>
<td>Multidisciplinary Robust Design Optimization of Generic Fighter Aircraft using Global Variable Fidelity Modeling</td>
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<td>Maxim Tyau, Nhu Van Nguyen, Le Viet Thang Nguyen, Nadhie Juliawan, Sangho Kim, Jae-Woo Lee</td>
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<td>14:40</td>
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<td>Akari Tsuda (Osaka Prefecture University, Japan)</td>
<td>Optimum design of compliant mechanism for morphing wing structure using level set-based topology optimization</td>
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<td>Akari Tsuda, Nozomu Kogiso, Masato Tamayama, Takeyuki Yamada, Kazuhiro Izui, Shinji Nishiwaki</td>
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<td>351</td>
<td>Pierre-Jean Barjhoux (IRT Saint Euphery, FRANCE)</td>
<td>Mixed variable Structural optimization: toward an efficient hybrid algorithm</td>
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<td>Pierre-Jean Barjhoux, Youssef Diouane, Stéphane Grihon, Dimitri Bettebghor, Joseph Morlier</td>
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<td>15:20</td>
<td>414</td>
<td>Jaehyun Yoon (Yonsei University, Republic of Korea)</td>
<td>Enhanced PID Control Optimization of Hovering Quad-Copter for Robust Flight Stabilization</td>
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<td>Jaehyun Yoon, Jongsoo Lee</td>
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### Room: SN 19.1  
**Structural optimization**  
**Topology optimization with density methods 9 (environments)**

**Chair:** Ming Zhou (Altair Engineering, USA)

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<td>80</td>
<td>Robert Dienemann (Bergische University Wuppertal, Germany)</td>
<td>An Element Deactivation and Reactivation Scheme for the Topology Optimization based on the Density Method</td>
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<td>Robert Dienemann, Axel Schumacher, Sierk Fiebig</td>
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<td>211</td>
<td>Christopher Carrick (Queen's University, Canada)</td>
<td>Topology and cost optimization applied to develop new designs for a monorail structure</td>
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<td>Christopher Carrick, Il Yong Kim</td>
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<td>325</td>
<td>Saad Hafsa (BMW AG, Germany)</td>
<td>Study of different control parameters in a SIMP based topology optimization method for adaptation of structures</td>
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<td>Saad Hafsa, Axel Schumacher</td>
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<td>15:00</td>
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<td>Shintaro Yamasaki (Osaka University, Japan)</td>
<td>Knowledge discovery in dataset generated by topology optimization</td>
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<td>Shintaro Yamasaki, Kentaro Yaji, Kikuo Fujita</td>
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<td>488</td>
<td>Manuel Ramsaier (Ravensburg-Weingarten University, Germany)</td>
<td>Automatic Definition of density-driven Topology Optimization with graph-based Design Languages</td>
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<td>Manuel Ramsaier, Ralf Stetter, Markus Till, Stephan Rudolph, Axel Schumacher</td>
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### Room: SN 19.2  
**Structural optimization**  
**Topology optimization with other methods 4**

**Chair:** Oded Amir (Technion, Israel)

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<td>Grzegorz Dzierzanowski (Warsaw University of Technology, Poland)</td>
<td>Young’s modulus control in material and topology optimization</td>
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<td>Grzegorz Dzierzanowski, Tomasz Lewiński</td>
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<td>Katarzyna Tajs-Zielinska (Cracow University of Technology, Poland)</td>
<td>Generator of Optimal Topologies by Irregular Cellular Automata - GOTICA applied to spatial engineering structures</td>
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<td>Katarzyna Tajs-Zielinska, Bogdan Bochenek</td>
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<td>484</td>
<td>Wei Chen (Northwestern University, USA)</td>
<td>Design of Manufacturable Multiscale Structures using Connected Morphable Components based Topology Optimization</td>
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<td>Jiaodong Deng, Wei Chen</td>
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<td>282</td>
<td>Daniel Hübner (Universität Erlangen-Nürnberg, Germany)</td>
<td>Multidimensional Parametrization of Microcells inTwo-Scale Optimization with Sparse Grid Interpolation</td>
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<td>Daniel Hübner, Michael Stingl, Dirk Pflüger, Julian Valentin</td>
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<td>409</td>
<td>Xiaojia (Shelly) Zhang (Georgia Institute of Technology, USA)</td>
<td>A randomized approach based on stochastic sampling for topology optimization with many right-hand sides</td>
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<td>Xiaojia(Shelly) Zhang, Eric de Sturler, Virg Glauicio Paulino</td>
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### Table 1: Optimization with emphasis on particular physics model

**Title:** Considering dynamic load-cases 3 (topology optimization)

**Chair:** Wolfgang Achtziger (University of Erlangen-Nürnberg, Germany)

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<td>14:00</td>
<td>15</td>
<td>Jialiang Sun</td>
<td>Three-Dimensional Topology Optimization of a Flexible Multibody System via Moving Morphable Components</td>
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<td>(Nanjing University of Aeronautics and Astronautics, China)</td>
<td>Jialiang Sun, Qiang Tian, Haiyan Hu</td>
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<td>14:20</td>
<td>274</td>
<td>Ali Moghadasi</td>
<td>Modified Equivalent Static Load Methods in Topology Optimization of Flexible Multibody Systems</td>
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<td>(Hamburg University of Technology, Germany)</td>
<td>Ali Moghadasi, Alexander Held, Robert Seifried</td>
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<td>14:40</td>
<td>100</td>
<td>Hong Kyoung Seong</td>
<td>Systematic structural design for frequency response applications using topology optimization</td>
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<td>(Yonsei University, Korea)</td>
<td>Hong Kyoung Seong, Jeonghoon Yoo</td>
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<td>15:00</td>
<td>223</td>
<td>Dongchen Qin</td>
<td>Topology optimization design of the box girder based on dynamic characteristics</td>
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<td>(Zhengzhou University, China)</td>
<td>Heming Zhao, Dongchen Qin, Jiangyi Chen, Qiang Zhu, Zebin Zhang</td>
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<tr>
<td>15:20</td>
<td>39</td>
<td>Xiaopeng Zhang</td>
<td>Structural robust topology optimization under uncertain dynamic loads</td>
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<td></td>
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<td>(Dalian University of Technology, China)</td>
<td>Xiaopeng Zhang, Zhan Kang, Akihiro Takezawa</td>
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</table>

### Table 2: Optimization focusing on particular industrial applications

**Title:** Wind energy systems

**Chair:** Zhen Luo (University of Technology Sidney, Australia)

<table>
<thead>
<tr>
<th>Time</th>
<th>ID</th>
<th>Presenting Author</th>
<th>Title</th>
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<tbody>
<tr>
<td>14:00</td>
<td>174</td>
<td>Ajit Pillai</td>
<td>Development of a Multi-Objective Genetic Algorithm for the Design of Offshore Renewable Energy Systems</td>
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<td>(The University of Exeter, United Kingdom)</td>
<td>Ajit Pillai, Giovanni Rinaldi, Philipp Thies, Lars Johanning</td>
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<tr>
<td>14:20</td>
<td>201</td>
<td>Alexander Verbart</td>
<td>Sizing optimization of an offshore wind turbine jacket under dynamic loads considering stress and eigenfrequency constraints</td>
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<td>(DTU Wind Energy, Denmark)</td>
<td>Alexander Verbart, Kasper Sandal, Mathias Stolpe</td>
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<tr>
<td>14:40</td>
<td>254</td>
<td>Karoly Jarmai</td>
<td>Life cycle assessment of welded structures using cost optimization</td>
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<td></td>
<td>(University of Miskolc, Hungary)</td>
<td>Karoly Jarmai</td>
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<tr>
<td>15:00</td>
<td>367</td>
<td>Terence Macquart</td>
<td>Geometric and Material Optimisation of Bend-Twist Coupled Wind Turbine Blades</td>
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<td>(University of Bristol, England)</td>
<td>Terence Macquart, David Langston</td>
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<tr>
<td>15:20</td>
<td>477</td>
<td>Ali Sarhadi</td>
<td>Optimal design of galvanic corrosion protection systems for jacket wind turbine support structures</td>
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<td>(Technical university of Denmark (DTU), Denmark)</td>
<td>Ali Sarhadi, Asger Bech Abrahamsen, Mathias Stolpe</td>
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## Session 10
### Wednesday, 7th June 2017
16:20 – 18:00

### Room: PK 4.1
#### Chair: Tae Hee Lee (Hanyang University, Korea)

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<tbody>
<tr>
<td>16:20</td>
<td>42</td>
<td>KK Choi (The University of Iowa, USA)</td>
<td>Confidence-Based Uncertainty Quantification and Reliability Assessment with Limited Number of Input and Output Test Data KK Choi, Hyunkyoo Cho, Min-yeong Moon, Nicholas Gaul</td>
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<tr>
<td>16:40</td>
<td>103</td>
<td>Yoojeong Noh (Pusan National University, South Korea)</td>
<td>Multivariate Density Estimation Using Kernel Density Estimation and Copulas Yoojeong Noh, Young-Jin Kang</td>
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<tr>
<td>17:00</td>
<td>104</td>
<td>Young-Jin Kang (Pusan National University, South Korea)</td>
<td>Development of an Integrated Statistical Modeling Method for Insufficient Data Young-Jin Kang, O-Kaung Lim, Yoojeong Noh</td>
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<tr>
<td>17:20</td>
<td>536</td>
<td>Ming Zhou (Altair Engineering, USA)</td>
<td>A Two-Phase Approach based on Serial Approximation for Reliability-Based Design Optimization Ming Zhou, Zhifan Luo, Ping Yi, Gengdong Cheng</td>
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<tr>
<td>17:40</td>
<td>73</td>
<td>Fenfen Xiong (Beijing Institute of Technology, China)</td>
<td>Robust optimization using sparse data-driven polynomial chaos and trust region Fenggang Wang, Shishi Chen, Fenfen Xiong, Jianmei Song</td>
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### Room: PK 4.3
#### Chair: Jose Herskovits (COPPE/UFRJ and IME, Brazil)

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<tr>
<td>16:20</td>
<td>135</td>
<td>Qingsheng Yang (Beijing University of Technology, China)</td>
<td>Optimization design of smart reversible diaphragm using shape memory polymer Qingsheng Yang, Ran Tao</td>
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<tr>
<td>16:40</td>
<td>316</td>
<td>Hongling Ye (Beijing University of Technology, China)</td>
<td>Experimental and Numerical Analysis of Mechanical Properties of Tape Spring Hinges and Optimal Design Hongling Ye, Yang Zhang, Qingsheng Yang, Ramana V. Grandhi</td>
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<tr>
<td>17:00</td>
<td>333</td>
<td>Vahid Ghaffari Mejlej (TU Braunschweig, Germany)</td>
<td>An approach for multidisciplinary structural optimization using of improved NSGA-II and ε-Constrain method in light-weight application Vahid Ghaffari Mejlej, Paul Falkenberg, Eiko Türck, Thomas Vietor</td>
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<tr>
<td>17:20</td>
<td>348</td>
<td>Li Yuwei (Dalian University of Technology, China)</td>
<td>Fast dynamic analysis and optimization of beam-type structures based on Parametric Reduced-Order Model Li Yuwei, Wang Bo, Hao Peng, Zhou Yan, Zhao Yang</td>
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<tr>
<td>17:40</td>
<td>383</td>
<td>Yong Zhao (National University of Defense Technology, China)</td>
<td>Parametric Modelling and Optimal Design of Space Tubular Extendable Booms via a One-dimensional Unified Formulation Yi Hu, Yong Zhao, Jie Wang</td>
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### Room: PK 4.4
#### Optimization focusing on particular industrial applications

**Civil engineering 1**

**Chair:** Glaucio Paulino (Georgia Institute of Technology, USA)

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<tr>
<td>16:20</td>
<td>7</td>
<td>Takahiko Kurashashi</td>
<td>Optimal estimation of tidal flow based on Kalman filter FEM using time history of water elevation</td>
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<td>(Nagoya University of Technology, Niigata)</td>
<td>Takahiko Kurashashi, Taichi Yoshiara, Yasuhide Kobayashi, Noboru Yamada</td>
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<tr>
<td>16:40</td>
<td>172</td>
<td>Cédric Van hoorickx</td>
<td>Topology optimization of elastic wave barriers using a two-and-a-half dimensional finite element methodology</td>
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<td>(KU Leuven, Belgium)</td>
<td>Cédric Van hoorickx, Mattias Schevenels, Geert Lombaert</td>
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<td>17:00</td>
<td>189</td>
<td>Teemu Tlainen</td>
<td>Buckling length in mixed-integer linear frame optimization</td>
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<td>(Tampere university of technology, Finland)</td>
<td>Teemu Tlainen, Kristo Mela, Markku Heinisuo</td>
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<tr>
<td>17:20</td>
<td>357</td>
<td>Panagiotis Mergos</td>
<td>Sustainable seismic design of reinforced concrete frame structures with genetic algorithms</td>
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<td>(City, University of London, UK)</td>
<td>Panagiotis Mergos</td>
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<tr>
<td>17:40</td>
<td>492</td>
<td>Hongjia Lu</td>
<td>Formulations and applications of transmissible loads in layout optimization</td>
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<td>(University of Sheffield, United Kingdom)</td>
<td>Hongjia Lu, Matthew Gilbert, Andrew Tyas</td>
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### Room: SN 19.1
#### Structural optimization

**Topology optimization with density methods 10 (additive manufacturing)**

**Chair:** Robert Dienemann (Bergische Universität Wuppertal, Germany)

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<td>16:20</td>
<td>298</td>
<td>Ole Sigmund</td>
<td>Multiscale approaches in topology optimization</td>
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<td>(Technical University of Denmark, Denmark)</td>
<td>Ole Sigmund, Jeroen Groen, Jun Wu, Simon Dyring, Niels Aage</td>
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<td>16:40</td>
<td>303</td>
<td>Emiel van de Ven</td>
<td>A PDE-based approach to constrain the minimum overhang angle in topology optimization for additive manufacturing</td>
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<td>(TU Delft, NLR, The Netherlands)</td>
<td>Emiel van de Ven, Matthijs Langelaar, Can Ayas, Robert Maas, Fred van Keulen</td>
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<tr>
<td>17:00</td>
<td>374</td>
<td>Yoram Mass</td>
<td>Large-scale three-dimensional topology optimization considering overhang limitations in 3-D printing</td>
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<td>(Technion - I.I.T., Israel)</td>
<td>Yoram Mass, Oded Amir</td>
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<td>17:20</td>
<td>511</td>
<td>Pablo Alarcon Soto</td>
<td>Topology optimization of mechanical components fabricated by additive manufacturing for a Shell Eco Marathon vehicle</td>
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<td>(University of Liege, Belgium)</td>
<td>Pablo Alarcon Soto, Maxime Collet, Simon Bauduin, Eduardo Fernandez Sanchez, Antonio Martinez, Pierre Ducinsky</td>
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<td>17:40</td>
<td>526</td>
<td>Fabian Fuerle</td>
<td>Topology Optimization for Additive Manufacturing Considering Penalty for Overhang Support</td>
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<td>(Altair Engineering, USA)</td>
<td>Fabian Fuerle, Ming Zhou, Raphael Fleury</td>
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### Room: SN 19.2
#### Structural optimization

**Topology optimization with other methods 5**

**Chair:** Pierre Duysinx (University of Liège, Belgium)

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<tr>
<td>16:20</td>
<td>285</td>
<td>Jeroen Groen</td>
<td>Homogenization-based topology optimization for high-resolutionmanufacturable microstructures</td>
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<td>Jeroen Groen, Ole Sigmund</td>
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<td>16:40</td>
<td>413</td>
<td>Junji Kato</td>
<td>Multi-phase field topology optimization with multi-scale analysis for maximizing heat conductivity of a metallic material with crystalline structure</td>
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<td>(Tohoku University, Japan)</td>
<td>Junji Kato, Toshiba Ichibangase, Shun Ogawa, Tomohiro Takaki</td>
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<td>17:00</td>
<td>512</td>
<td>Jersson Xavier Leon</td>
<td>Regularization scheme for controlling length scale in topology optimization based on bacterial quenotaxis</td>
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<td>(University of Santo Tomas, Colombia)</td>
<td>Jersson Xavier Leon, Juan Felipe Giraldo, MariaAlejandra Guzman</td>
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<td>17:20</td>
<td>440</td>
<td>Hai Huang</td>
<td>A topology optimization method for complex structures based on extended approximation concepts</td>
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<td>(Beihang University, China)</td>
<td>Hai Huang, Haichao An, Haibo Ma, Shenyuan Chen</td>
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<td>17:40</td>
<td>537</td>
<td>Paul Falkenberg</td>
<td>Cost and weight optimization of hybrid parts using a multi-material topology optimization approach</td>
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<td>(TU Braunschweig, Germany)</td>
<td>Paul Falkenberg, Eiko Türc, Thomas Vietor</td>
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<td>16:20</td>
<td>38</td>
<td>Andres Tovar</td>
<td>Metamodel-based global optimization of vehicle structures for crashworthiness supported by clustering methods</td>
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<td>(Purdue University Indianapolis, USA)</td>
<td>Kai Liu, Duane Detwiler, Andres Tovar</td>
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<td>16:40</td>
<td>328</td>
<td>Carlos J. Falconi D.</td>
<td>Automatic generation, validation and correlation of the submodels for the use in the optimization of crashworthy structures</td>
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<td>(Automotive Simulation Center Stuttgart, Germany)</td>
<td>Carlos J. Falconi D., Alexander F. Walser, Harman Singh, Axel Schumacher</td>
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<td>17:00</td>
<td>329</td>
<td>Fabian Duddeck</td>
<td>Multi-fidelity Approaches for Crashworthiness Optimisations</td>
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<td>(Technische Universität München, Germany)</td>
<td>Fabian Duddeck</td>
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<td>Jacobo Díaz</td>
<td>Size and shape optimization of hybrid energy absorbers for crashworthy aircraft structures</td>
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<td>(University of A Coruña, Spain)</td>
<td>Jacobo Díaz, Javier Paz, Luis Romera</td>
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<td>Charles Mortished</td>
<td>MDO of a reduced fidelity automotive body-in-white FE model using crushable frame springs and sub space metamodels in trust-regions</td>
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<td>(Swansea University, UK)</td>
<td>Charles Mortished, Jonathan Ollar, Peter Benzie, Royston Jones, Johann Sienz, Vassili Toropov</td>
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<tr>
<td>16:20</td>
<td>261</td>
<td>Nozomu Kogiso</td>
<td>Optimum structural design for high-precision space smart reflector</td>
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<td>(Osaka Prefecture University, Japan)</td>
<td>Nozomu Kogiso, Naoya Furutani, Tomohiko Naka, Kimihiro Kimura, Hiroaki Tanaka, Takashi Iwasa</td>
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<td>16:40</td>
<td>408</td>
<td>Jing Han</td>
<td>Optimum Design on Neck Embossing Decoration of Aluminum Beverage Bottles</td>
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<td>(Universal Can Corporation, Japan)</td>
<td>Jing Han, Koetsu Yamazaki, Akiyoshi Matsuzaki</td>
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<td>17:00</td>
<td>473</td>
<td>Alberto Pizzolato</td>
<td>Multi-scale concurrent material and structure design of a metal matrix for heat transfer enhancement in phase change materials</td>
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<td>(Politecnico di Torino, Italy)</td>
<td>Alberto Pizzolato, Adriano Sciacovelli, Vittorio Verda</td>
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<tr>
<td>17:20</td>
<td>535</td>
<td>Sanghoon Lee</td>
<td>An integrated framework of risk assessment for spent nuclear fuel storage facility under aircraft crash</td>
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<td>(Keimyung University, Republic of Korea)</td>
<td>Sanghoon Lee, Belal Almomani, Dongchan Jang, Hyun Gook Kang</td>
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</table>
## General approaches and strategies

**Uncertainty and robust design**

**Chair:** Wei Chen (Northwestern University, USA)

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<tr>
<td>09:00</td>
<td>295</td>
<td>Heonjun Yoon (Seoul National University, Republic of Korea)</td>
<td>Toward a Comprehensive Understanding of Uncertainty Effects on Model Predictive Capability in Engineering Analysis and Design under Uncertainty (Heonjun Yoon, Joung Taek Yoon, Hyejeong Son, Byeng D. Youn)</td>
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<td>09:20</td>
<td>391</td>
<td>Klaus Hoschke (Fraunhofer EMI, Germany)</td>
<td>Robust Design Optimization with Metamaterial by Additive Manufacturing (Klaus Hoschke)</td>
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<td>09:40</td>
<td>489</td>
<td>Xuchun Ren (Georgia Southern University, USA)</td>
<td>Stochastic sensitivity analysis for robust topology optimization (Xuchun Ren, Xiaodong Zhang)</td>
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<tr>
<td>10:00</td>
<td>533</td>
<td>Clément Hayer (Volkswagen AG, Germany)</td>
<td>Robustness optimization within the development process by integration of manufacturing tolerances in the simulation (Clément Hayer, Sierk Fiebig, Thomas Vietor, Jürgen Sellschopp)</td>
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<tr>
<td>10:20</td>
<td>466</td>
<td>James Guest (Johns Hopkins University, USA)</td>
<td>Topology Optimization Considering Filtered White Noise Stochastic Excitations (Yang Yang, Mu Zhu, Michael Shields, James Guest)</td>
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## Optimization algorithms

**Optimization algorithms: local mathematical methods**

**Chair:** Kazem Ghabraie (Deakin University, Australia)

### Room: PK 4.3

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<tr>
<td>09:00</td>
<td>94</td>
<td>Thomas Guess (Universität Erlangen-Nürnberg, Germany)</td>
<td>A New Algorithm for Material Optimization Applied on a Two-Scale Optimization Approach for Lattice Structures (Thomas Guess, Michael Stingl)</td>
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<td>09:20</td>
<td>117</td>
<td>Mathias Stolpe (DTU Wind Energy, Denmark)</td>
<td>Optimal modular design of jacket structures for offshore wind turbines (Mathias Stolpe, Kasper Sandal)</td>
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<td>09:40</td>
<td>165</td>
<td>Ramana Grandhi (Wright State University, USA)</td>
<td>Multi-Fidelity Optimization of Complex Physics Involved Engineering Systems (Christopher Fischer, Ramana Grandhi)</td>
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<td>350</td>
<td>Chendi Lin (University of Illinois at Urbana-Champaign, USA)</td>
<td>Efficient Optimal Surface Texture Design Using Linearization (Chendi Lin, Yong Hoon Lee, Jonathon Schuh, James Allison, Randy Ewoldt)</td>
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<td>10:20</td>
<td>416</td>
<td>Robert Canfield (Virginia Tech, USA)</td>
<td>Surrogate Model for Large-Scale Optimization and Limit-State Functions: Quadratic Multipoint Exponential Approximation (Robert Canfield)</td>
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## Optimization focusing on particular industrial applications

### Civil engineering 2

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<tr>
<td>09:00</td>
<td>85</td>
<td>Luis Simões</td>
<td>Optimization of Concrete Cable-stayed Bridges with discrete Design Variables</td>
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<td>(University of Coimbra, Portugal)</td>
<td>Fernando Ferreira, Luis Simões</td>
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<td>09:20</td>
<td>122</td>
<td>Alberto Martins</td>
<td>Optimization of extradosed concrete bridges</td>
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<td>(University of Coimbra, Portugal)</td>
<td>Alberto Martins, Luís Simões, João Negrão</td>
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<td>09:40</td>
<td>258</td>
<td>Waldir N. Felipe</td>
<td>A discrete binary particle swarm algorithm for sizing optimization of steel truss structures</td>
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<td>(University of Barra Mansa, Brazil)</td>
<td>Waldir N. Felipe, Luiza F. Carneiro</td>
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### Chair: Franz-Joseph Barthold (TU Dortmund, Germany)

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<td>10:00</td>
<td>399</td>
<td>Gieljan Vantyghem</td>
<td>Design of cellular materials and meso-structures with improved structural and thermal performances.</td>
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<td>(Ghent University, Belgium)</td>
<td>Gieljan Vantyghem, Marijke Steeman, Wouter De Corte, Veerle Boel</td>
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<tr>
<td>10:20</td>
<td>534</td>
<td>Mohammad Reza Ghasemi</td>
<td>Modified Ideal Gas Molecular Movement Algorithm based on Quantum Behavior</td>
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<td>(University of Sistan and baluchestan, Iran)</td>
<td>Mohammad Reza Ghasemi, Hesam Varaee</td>
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## Structural optimization

### Topology optimization with density methods 11 (additive manufacturing)

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<td>Yu-Hsin Kuo</td>
<td>Optimal external support structure design in additive manufacturing</td>
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<td>(National Chung Cheng University, Taiwan (R.O.C.))</td>
<td>Yu-Hsin Kuo, Chih-Chun Cheng</td>
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<td>09:20</td>
<td>91</td>
<td>Marcel Hoffarth</td>
<td>ALM Overhang Constraint in Topology Optimization for Industrial Applications</td>
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<td>(Dassault Systèmes Deutschland, Germany)</td>
<td>Marcel Hoffarth, Claus Pedersen, Nikolai Gerzen</td>
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<td>09:40</td>
<td>102</td>
<td>Emmanuel Tromme</td>
<td>Condensation techniques for multiscale topology optimization and additive manufacturing</td>
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<td>(Toyota Central R&amp;D Labs, Japan)</td>
<td>Emmanuel Tromme, Atsushi Kawamoto, James K. Guest</td>
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<td>10:00</td>
<td>118</td>
<td>Alain Garaigordobil</td>
<td>On a flexible overhang constraint in Topology Optimization for Additive Manufacturing</td>
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<td>(University of the Basque Country, Spain)</td>
<td>Alain Garaigordobil, Rubén Ansola, Estrella Vegueria</td>
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<tr>
<td>10:20</td>
<td>178</td>
<td>Matthijs Langelaar</td>
<td>Combined optimization of part topology, supports and printing orientation for additive manufacturing</td>
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<td>(Delft University of Technology, the Netherlands)</td>
<td>Matthijs Langelaar</td>
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### Chair: Peter Clausen (Dassault Systems, Germany)

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<tr>
<td>09:00</td>
<td>8</td>
<td>Kemin Zhou</td>
<td>Topological Optimization of Truss Base on Truss-Like Continuum</td>
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<td>(Huazhao University, China)</td>
<td>Kemin Zhou</td>
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<td>09:20</td>
<td>34</td>
<td>Makoto Ohsaki</td>
<td>Force density method for simultaneous optimization of geometry and topology of trusses</td>
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<td>(Kyoto University, Japan)</td>
<td>Makoto Ohsaki, Kazuki Hayashi</td>
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<tr>
<td>09:40</td>
<td>193</td>
<td>Florian Mitjana</td>
<td>Truss-like structures optimization under buckling constraints using frame elements with anisotropic cross sections</td>
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<td>(Université de Toulouse, France)</td>
<td>Florian Mitjana, Sonia Cafieri, Florian Bugarin, Christian Gogu, Fabien Castanie</td>
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<td>10:00</td>
<td>313</td>
<td>Kristo Mela</td>
<td>Mixed variable approach for topology optimization of roof trusses</td>
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<td>(Tampere University of Technology, Finland)</td>
<td>Kristo Mela, Markku Heinisuo</td>
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<td>10:20</td>
<td>519</td>
<td>Tomasz Sokół</td>
<td>On the numerical approximation of Michell trusses and the improved ground structure method</td>
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<td>(Warsaw University of Technology, Poland)</td>
<td>Tomasz Sokół</td>
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### Optimization with emphasis on particular physics model

**Considering crash load-cases 2 (topology optimization)**

**Chair: Nielen Stander (Livermore Software Technology Corporation, USA)**

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<tr>
<td>09:00</td>
<td>86</td>
<td>Duo Zeng (Technical university of munich, Germany)</td>
<td>Topology Optimization of Thin-walled Structures Under Static/CrashLoading Case in the Hybrid Cellular Automaton Framework&lt;br&gt;Duo Zeng, Fabian Duddeck</td>
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<td>09:20</td>
<td>115</td>
<td>Mariusz Bujny (Technical University of Munich, Germany)</td>
<td>Topology Optimization of Crash Structures with the Hybrid Evolutionary Level Set Method&lt;br&gt;Mariusz Bujny, Nikola Aulig, Markus Olhofer, Fabian Duddeck</td>
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<tr>
<td>09:40</td>
<td>119</td>
<td>Katrin Weider (Bergische Universität Wuppertal, Germany)</td>
<td>A topology optimization scheme for crash loaded structures using Topological Derivatives&lt;br&gt;Katrin Weider, Axel Schumacher</td>
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<tr>
<td>10:00</td>
<td>324</td>
<td>Christopher Ortmann (Volkswagen Group, Germany)</td>
<td>New optimization sequence for the Graph and Heuristic based Topology Optimization of crashworthiness profile structures&lt;br&gt;Christopher Ortmann, Axel Schumacher</td>
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<tr>
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<td>169</td>
<td>Dominik Schneider (Bergische Universität Wuppertal, Germany)</td>
<td>Finding optimized layouts for ribs on surfaces using the Graph and Heuristic based Topology Optimization&lt;br&gt;Dominik Schneider, Axel Schumacher</td>
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### Optimization focusing on particular industrial applications

**Machines and Electronics**

**Chair: Panos Papalambros (University of Michigan, USA)**

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<td>09:00</td>
<td>111</td>
<td>Alberto Donoso (ETSII - UCLM, Spain)</td>
<td>Robust design of piezoelectric filters&lt;br&gt;Alberto Donoso, José Carlos Bellido</td>
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<td>09:20</td>
<td>354</td>
<td>Renjing Gao (Dalian University of Technology, China)</td>
<td>A Novel Parameterization for the Topology Optimization of Metallic Antenna Design&lt;br&gt;Qi Wang, Renjing Gao, Shutian Liu</td>
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<td>09:40</td>
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<td>Tianjian Li (University of Shanghai, China)</td>
<td>Design of an internally cooled turning tool based on topology optimization and CFD simulation&lt;br&gt;Tianjian Li</td>
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<td>10:00</td>
<td>23</td>
<td>Youmin Hu (Huazhong University, China)</td>
<td>The multi-constraint and multi-objective optimization of crane&lt;br&gt;Kuming Zheng, Youmin Hu, Bo Wu, Tielin Shi</td>
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<td>10:20</td>
<td>43</td>
<td>Xiaohong Ding (University of Shanghai, China)</td>
<td>Thermal Error Control Technique for Precision Parts of Machine Tools Based on Thermal Deformation Balance Principle&lt;br&gt;Xiaohong Ding, Zeji Ge, Jiali Gao</td>
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# General approaches and strategies

**Uncertainty and robust design 6**

Chair: Yoshihiro Kanno (Tokyo Institute of Technology, Japan)

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<tr>
<td>11:20</td>
<td>270</td>
<td>Jennifer Forrester (University of Southampton, United Kingdom)</td>
<td>Characterization of geometric uncertainty in gas turbine engine components using CMM data</td>
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<td>Jennifer Forrester, Andy Keane</td>
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<td>11:40</td>
<td>302</td>
<td>Palaniappan Ramu (Indian Institute of Technology Madras, India)</td>
<td>Bounded low failure probability estimates with scarce samples using importance sampling</td>
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<td>Kiran Pannerselvam, Palaniappan Ramu</td>
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<tr>
<td>12:00</td>
<td>326</td>
<td>Jannis Greifenstein (Universität Erlangen-Nürnberg, Germany)</td>
<td>Topology optimization with local worst-case damage</td>
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<td>Jannis Greifenstein, Michael Stingl</td>
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<tr>
<td>12:20</td>
<td>371</td>
<td>Hee-Seong Kim (Korea Aerospace University, Republic of Korea)</td>
<td>Statistical Model Calibration and Validation of Elasto-Plastic Analysis in Pyrotechnically Actuated Devices based on Operating Mechanism</td>
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<td>Hee-Seong Kim, Joo-Ho Choi, Nam-Ho Kim, Seung-Gyo Jang</td>
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# Optimization algorithms

**Optimization algorithms: local mathematical methods 2**

Chair: Janos Logo (Budapest University of Technology and Economics, Hungary)

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<td>11:20</td>
<td>250</td>
<td>Seok Won Kang (Seoul National University, Republic of Korea)</td>
<td>Topology optimization of general-joint planar linkage mechanisms with an application to finger rehabilitation device design</td>
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<td>Pa Seok Won Kang, Jeong Han Yu, Sang Min Han, Yoon Young Kim</td>
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<td>11:40</td>
<td>305</td>
<td>Bence Balogh (Budapest University)</td>
<td>On the element free methods in topology optimization</td>
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<td>Bence Balogh, Janos Logo</td>
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<td>12:00</td>
<td>377</td>
<td>Jose Herskovits (COPPE/UFRJ and IME, Brazil)</td>
<td>FDIPA, GSDP - A Feasible Point Algorithm for General Semidefinite Programming with Applications in Structural Optimization</td>
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<td>Jose Herskovits, Jean Rodolphe Roche, Elmer Bazán, Andrés Zúñiga</td>
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<td>12:20</td>
<td>29</td>
<td>Anikó Csébfalvi (University of Pécs, Hungary)</td>
<td>Volume-constrained expected compliance minimization in continuous topology optimization with normally distributed and correlated random load directions</td>
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<td>Anikó Csébfalvi, János Lógo</td>
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<td>12:40</td>
<td>130</td>
<td>Bo Ping Wang (University of Texas at Arlington, USA)</td>
<td>Some New Eigenvalue Criteria for Structural Optimization Under Harmonic Loading</td>
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<td>Bo Ping Wang</td>
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### Optimization focusing on particular industrial applications
#### Automotive 1
**Chair:** Christopher Ortmann (Volkswagen Group, Germany)

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<tr>
<td>11:20</td>
<td>355</td>
<td>Shutian Liu (Dalian University of Technology, China)</td>
<td>Topology optimization method for layout design of stamping structures with flanging, Shutian Liu, Yunfeng Luo</td>
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<td>11:40</td>
<td>304</td>
<td>Niklas Klinke (Mubea Tailor Rolled Blanks GmbH, Germany)</td>
<td>Parameterization setup for metamodel based optimizations of Tailor Rolled Blanks, Niklas Klinke, Axel Schumacher</td>
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<td>361</td>
<td>Ngoc-Linh Nguyen (Sejong University, South Korea)</td>
<td>Concept design of automotive body frame using higher-order-beam-based modeling method, Ngoc-Linh Nguyen, Gang-Won Jang</td>
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<td>Youngsuk Jung (Hanyang university, Korea)</td>
<td>Multi-Material Topology Optimization of Automotive Component Structure, Youngsuk Jung, Seungjae Min</td>
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<td>Arianne X. Collopy (University of Michigan, USA)</td>
<td>Modular Design Concept Generation for a Collection of Interacting Systems with Application to Modular Vehicle Fleet Design, Alparslan Emrah Bayrak, Arianne X. Collopy, Bogdan I. Epureanu, Panos Y. Papalambros</td>
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### Structural optimization
#### Topology optimization with density methods 12 (additiv manufacturing)
**Chair:** Pauli Pedersen (Technical University of Denmark, Denmark)

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<td>11:20</td>
<td>60</td>
<td>Joe Alexander (Technical University of Denmark, Denmark)</td>
<td>Numerical studies and experimental validation of topology-optimised aluminium heat sinks manufactured by additive manufacturing, Joe Alexander, Ole Sigmund, Te Knud Erik Meyer, Boyan S. Lazarov</td>
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<td>11:40</td>
<td>99</td>
<td>Akihiro Takezawa (Hiroshima University, Japan)</td>
<td>Experimental verification of topology optimized lattice using metal additive manufacturing, Akihiro Takezawa, Kazuo Yonekura, Yuichiro Koizumi, Makoto Kobashi, Mitsuru Kitamura</td>
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<td>Bradley Taylor (Queen's University, Canada)</td>
<td>Topology optimization of large scale turbine engine bracket assembly with additive manufacturing considerations, Bradley Taylor, Jamal Zeinalov, Il Yong Kim</td>
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<td>476</td>
<td>Mikhail Osanov (Johns Hopkins University, USA)</td>
<td>Topology Optimization for Photopolymer-based Additive Manufacturing, Mikhail Osanov, James Guest</td>
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<td>289</td>
<td>Yiqiang Wang (Hong Kong University of Science and Technology, China)</td>
<td>Novel cellular structural design method for additive manufacturing, Yiqiang Wang, Michael Yu Wang</td>
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### General approaches and strategies
#### Parameter identification
**Chair:** Lothar Harzheim (Adam Opel AG, Germany)

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<td>188</td>
<td>Ehsan Adeli (Institute of Scientific Computing, Germany)</td>
<td>Bayesian Estimation of Steel Material Properties under Cyclic LoadingCondition, Ehsan Adeli, Bojana Rosic, Hermann G. Matthies</td>
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<td>Bojana Rosic (TU Braunschweig, Germany)</td>
<td>Conditional expectation based spectral Bayesian filter for time-dependent and nonlinear systems, Bojana Rosic, Muhammad Sadiq Sarfaraz, Hermann Matthies</td>
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<td>461</td>
<td>Wongon Kim (Seoul National University, South Korea)</td>
<td>A New Calibration Metric to Improve the Solution Feasibility of Calibration Problems: Marginal Probability and Correlation Residual (PCR), Wongon Kim, Guesuk Lee, Hyejeong Son, Guilian Yi, Byeng D. Youn</td>
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<td>531</td>
<td>Hermann G. Matthies (TU Braunschweig, Germany)</td>
<td>Bayesian Identification, Hermann G. Matthies</td>
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### Optimization with emphasis on particular physics model

**Considering fatigue/durability/damage 1**

**Chair:** Qing Li (University of Sydney, Australia)

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<td>Kasper Sandal (DTU Wind Energy, Denmark)</td>
<td>Comparison of fatigue constraints in optimal design of jacket structures for offshore wind turbines</td>
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<td>Jacob Oest, Kasper Sandal, Sebastian Schaftiert, Lars Einar Stieng, Michael Muskulus</td>
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<td>Maxime Collet (University of Liège, Belgium)</td>
<td>Fatigue resistant designs using stress-based topology optimization</td>
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<td>Maxime Collet, Simon Bauduin, Eduardo Fernandez Sanchez, Pierre Duysinx</td>
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<td>Ricarda Berger (Leibniz Universität Hannover, Germany)</td>
<td>Blend Repair Shape Optimization for Damaged Compressor Blisks</td>
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<td>Ricarda Berger, Jan Häfele, Benedikt Hofmeister, Raimund Rolfes</td>
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<td>Bo Wang (Dalian University of Technology, China)</td>
<td>On the zero stress concentration design of notched structure in pyrotechnic separation device</td>
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<td>249</td>
<td>Yan Zhang (China Academy of Space Technology, China)</td>
<td>Design and Progressive Damage Analysis of Variable Stiffness Composite Laminate Based on Three-dimensional Hashin Failure Criterion</td>
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<td>Yan Zhang, Pengfei Wang, Bingyang Li, Yingze Cao, Fenfen Xiong</td>
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### Optimization focusing on particular industrial applications

**Medicine**

**Chair:** James Guest (John Hopkins University, USA)

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<td>Michael Seebach (Technical University of Munich, Germany)</td>
<td>Design of Bone Plates for Mandibular Reconstruction Using Topology and Shape Optimization</td>
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<td>Michael Seebach, Felix Theurer, Peter Foehr, Rainer Burgkart, Michael Friedrich Zaeh</td>
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<td>Ahmed Moussa (McGill University, Canada)</td>
<td>Topology optimization of a cervical fusion cage with graded porous Titanium</td>
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<td>Ahmed Moussa, Damiano Pasini</td>
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<td>Narendra Kurnia Putra (Tohoku University, Japan)</td>
<td>Comparative Study between Different Structures Cross Section Shape on Minimizing Low Wall Shear Stress along Stent Vicinity via Surrogate-based Optimization</td>
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<td>Narendra Kurnia Putra, Pramudita Satria Palar, Hitomi Anzai, Koji Shimoyama, Makoto Ohta</td>
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<td>Chander Sen (Indian Institute of Technology Ropar, India)</td>
<td>Is Cortical Bone Defect Healing a Structural Optimization Process?</td>
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<td>Chander Sen, Jitendra Prasad</td>
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<td>553</td>
<td>Emilio Silva (University of São Paulo, Brazil)</td>
<td>Topology Optimization Applied to the Design of a Blood Pump</td>
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<td>Emilio Silva, Juan Romero</td>
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### Session 13

**Thursday, 8th June 2017**

**14:00 – 15:40**

#### Chair: Fred van Keulen (TU Delft, Netherlands)

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<td>Chen Jiang (Huazhong University, China)</td>
<td>An adaptive sampling method combining local approximation and multi-point strategy for reliability-based design optimization Chen Jiang, Haobo Qiu, Liang Gao, Xiwen Cai</td>
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<td>14:20</td>
<td>14</td>
<td>Yoshihiro Kanno (Tokyo Institute of Technology, Japan)</td>
<td>Robust Truss Topology Optimization under Uncertain Loads by Using Penalty Concave-Convex Procedure Yoshihiro Kanno</td>
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<td>Joachim Rang (TU Braunschweig, Germany)</td>
<td>An optimal configuration of an aircraft with high lift configuration using surrogate models and optimisation under uncertainties Joachim Rang, Wolfgang Heinze</td>
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<td>Jing Zheng (Sydney University of technology, Australia)</td>
<td>Uncertain Topology Optimization for Continuum Structures with limited information Jing Zheng, Zhen Luo, Chao Jiang</td>
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<td>15:20</td>
<td>204</td>
<td>Constantin Diez (Adam Opel AG, Germany)</td>
<td>Big-Data based rule-finding for analysis of crash simulations Constantin Diez, Philipp Kunze, Dirk Toewe, Lothar Harzheim, Axel Schumacher</td>
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#### Chair: Raphael Haftka (University of Florida, USA)

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<td>181</td>
<td>Zhengyang Ma (National University of Defense Technology, China)</td>
<td>Cross-entropy Method for Continuous Optimization and Its' Improvement Zhengyang Ma, Wen Yao</td>
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<td>In-Bum Chung (LG Chem, South Korea)</td>
<td>Surrogate based global optimization using adaptive switching infill sampling criterion Dohyun Park, In-Bum Chung, Dong-Hoon Choi</td>
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<td>14:40</td>
<td>340</td>
<td>Anirban Basudhar (Livermore Software Technology Corporation, USA)</td>
<td>Parallel Constrained Efficient Global Optimization for Deterministic and Probabilistic Problems Anirban Basudhar</td>
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<td>15:00</td>
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<td>Ronald Bartz (TU Braunschweig, Germany)</td>
<td>Enhanced Firefly Algorithm with Implicit Movement Ronald Bartz, Paul Falkenberg, Sierk Fiebig, Thilo Franke, Joachim Axmann</td>
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<td>15:20</td>
<td>520</td>
<td>Taejin Kim (Seoul National University, Korea)</td>
<td>Robust Sensor Network Design under Sensor Malfunction for In-Situ Temperature Estimation of Li-ion Battery Pack Taejin Kim, Sunuwe Kim, Byeng D. Youn</td>
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### Optimization focusing on particular industrial applications

**Automotive 2**

**Chair:** Markus Schemat (BMW Group, Germany)

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<td>14:00</td>
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<td>Haitao Du (PATAC, China)</td>
<td>Development of BIW Topologic Optimization Method for Automotive Idling Vibration Haitao Du</td>
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### Structural optimization

**Topology optimization with density methods 13 (fluid and heat)**

**Chair:** Michael Stingl (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)

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**Chair:** Markus Schemat (BMW Group, Germany)

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**Chair:** Michael Stingl (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)

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