

ASMO-UK12 / ASMO-Europe1 / ISSMO Conference on Engineering Design Optimization
University of Leeds, UK
Monday 18 – Tuesday 19 July 2022

CONFERENCE PROGRAMME

The conference programme is provisional and may be subject to amendment.

MONDAY 18 JULY 2022		
08:15 – 09:00	<i>Registration and coffee (School of Electronic and Electrical Engineering foyer)</i>	
09:00 – 09:15	Welcome and Opening (<i>Mechanical Engineering Lecture Theatre A</i>)	
09:15 – 10:00	Keynote: Selected challenges in multi-disciplinary optimization and design for manufacturing in aeronautics	Dr Ingrid Lepot, Cenaero, Belgium (Chair: Prof Vassili Toropov)
Session 1: Topology Optimization I (Chair: Dr Rob Hewson)		
10:00 – 10:20	Challenges in topology optimization for postbuckling of stiffened panels	<u>Sheng Chu</u> , Carol Featherston and David Kennedy, Cardiff University, UK; Hyunsun Kim, University of California, USA
10:20 – 10:40	Topology optimization of support structures for offshore wind turbines using variable linking scheme	Marcos Teijeira Correia and <u>Suguang Dou</u> , Technical University of Denmark, Denmark
10:40 – 11:00	Dependent feature-driven method for topology optimization of deployable chain of bars structure	Dongsheng Jia, Elliot Bontoft and <u>Vassili Toropov</u> , Queen Mary University of London, UK; Jihong Zhu and Yu Zhang, Northwestern Polytechnical University, China
11:00 – 11:20	Enhanced truss topology optimization applied to a cellular wing box	<u>Enrico Stragiotti</u> , François-Xavier Irisarri and Cédric Julien, ONERA, France; Joseph Morlier, ISAE-Supaero, France
11:20 – 11:40	<i>Refreshments</i>	
Session 2: Optimisation Under Uncertainty (Chair: Dr Tom Rendall)		
11:40 – 12:00	Overview and comparison of reliability analysis techniques based on different multi-fidelity Gaussian processes	<u>Romain Espoey</u> s, Mathieu Balesdent and Loic Brevault, ONERA, France; Sophie Ricci and Paul Myce, CERFACS, France
12:00 – 12:20	Robust optimization of continuous flow polymerase chain reactions systems	<u>Yongxing Wang</u> , Jochen Voss and Harvey Thompson, University of Leeds, UK; Hazim Hamad, BP, Iraq
12:20 – 12:40	Aerodynamic shape optimization in the presence of uncertainties using adjoint-assisted PCE and projections	<u>Themistoklis Skamagkis</u> , Evangelos Papoutsis-Kiachagias and Kyriakos Giannakoglou, National Technical University of Athens, Greece
12:40 – 13:00	Robust design optimization of high aspect ratio wings with folding wingtip	<u>Long Liu</u> , Huaiyuan Gu and Jonathan Cooper, University of Bristol, UK
13:00 – 14:00	<i>Lunch</i>	

Session 3: Manufacturing Systems (Chair: Ronald Bartz)		
14:00 – 14:20	PDE based milling constraints for structural problems	<u>Kristian E. Jensen</u> , COMSOL Multiphysics®, Denmark
14:20 – 14:40	Space-time topology optimization considering elastic anisotropy in wire and arc additive manufacturing	<u>Kai Wu</u> , Weiming Wang, Fred van Keulen and Jun Wu, Delft University of Technology, Netherlands
14:40 – 15:00	Using pareto-optimal lattices in structural, two-scale topology optimisation	<u>Tom De Weer</u> and Karl Meerbergen, KULeuven, Belgium; Nicolas Lammens, Siemens, Belgium
15:00 – 15:20	On controlling microstructure through topology optimization for additive manufacturing	<u>Vibhas Mishra</u> , Can Ayas, Matthijs Langelaar and Fred van Keulen, Delft University of Technology, Netherlands
15:20 – 15:40	Lattice optimization using small scale homogenization approaches	<u>Rob Hewson</u> , Matthew Santer, Ryan Murphy, Morgan Nightingale and Dilaksan Thillaithevan, Imperial College London, UK
15:40 – 16:00	<i>Refreshments</i>	
Session 4: Greener Aviation (Chair: Dr Andrew Shires)		
16:00 – 16:20	A generic optimisation framework for greener aviation (using modelica and python)	<u>Philipp Gentz</u> , Indi Tristante and Shahrokh Shahpar, Rolls-Royce, UK
16:20 – 16:40	Towards a design framework for high pressure turboexpanders	<u>Joshua Kelly</u> , Sebastiano Fichera and Sebastian Timme, University of Liverpool, UK
16.40-17.00	Digital LEGO - System of Systems Architected MDO for Detailed Overall Aircraft Design Exploration Problems.	<u>Martin Muir</u> , Ed Kay, Ian Gibblet, Dr Stephen Rolston - Airbus Central Research and Technology.
17:00	<i>End of day one</i>	
17:15	<i>Conference photograph (in the Faculty)</i>	
19:00	<i>Reception and dinner (Woodhouse Suite, University House)</i>	

TUESDAY 19 JULY 2022

08:55 – 09:40	Keynote: Multiscale multiphysics topology optimization	Professor H Alicia Kim, University of California, USA (Chair: Prof Ozz Querin)
Session 5: Topology Optimization II (Chair: Dr Greg de Boer)		
09:40 – 10:00	Explicit level set topology optimisation with trust region - and metamodel-based optimiser	Elliot Bontoft, Yu Zhang, Dongsheng Jia, Rostyslav Dubrovka and <u>Vassili Toropov</u> , Queen Mary University of London, UK
10:00 – 10:20	Topology optimization using the constrained natural element method	<u>Yanda Chen</u> , Eric Monteiro, Imade Koutiri and Véronique Favier, HESAM Universite, France
10:20 – 10:40	Geometrically nonlinear topology optimisation for stiffened shell structures	<u>Peter Dunning</u> , University of Aberdeen, UK
10:40 – 11:00	Topology design of two-dimensional continuum structures considering buckling effect	Mariano Victoria-Nicolás, Pascual Martí-Montrull and Concepción Díaz-Gómez, Technical University of Cartagena, Spain; <u>Oswaldo Querin</u> , University of Leeds, UK
11:00 – 11:20	<i>Refreshments</i>	
Session 6: Heat Transfer Optimization (Chair: Dr Shahrokh Shahpar)		
11:20 – 11:40	Level set-based topology optimization for conjugate heat transfer problems with turbulent flows	<u>Lise Noel</u> , Delft University of Technology, Netherlands; Kurt Maute, University of Colorado Boulder, USA
11:40 – 12:00	Multi-objective optimisation of DNA amplification efficiency in continuous flow polymerase chain reaction systems	<u>Foteini Zagklavara</u> , Peter Jimack, Nikil Kapur, Oswaldo Querin and Harvey Thompson, University of Leeds, UK
12:00 – 12:20	CFD-enabled multi-objective design optimisation of serpentine heat sinks using machine learning	<u>Muhammad Raihan</u> , Harvey Thompson, Oswaldo Querin and Nikil Kapur, University of Leeds, UK
12:20 – 12:40	An approach to systematically reduce the extent of the design space in topology optimization for heat transfer problems	<u>Simon Knecht</u> and Albert Albers, Karlsruhe Institute of Technology, Germany
12:40 – 13:00	A method to reduce experimental costs using multi-fidelity Gaussian processes for corrugated tubes	<u>Atul Singh</u> , David Toal and Edward Richardson, University of Southampton, UK; Claus Ibsen, Vestas aircoil A/S, Denmark
13:00 – 14:00	<i>Lunch</i>	

Session 7: Shape Optimization & Sensitivity Analyses I (Chair: Dr Peter Dunning)		
14:00 – 14:20	Eulerian shape optimization by density advection using a three-field approach	<u>Thilo Franke</u> , Ronald Bartz and Sierk Fiebig, Volkswagen AG, Germany
14:40 – 15:00	Volume of solid parameterisation using cellular automata for aerodynamic optimisation	<u>Maximilian Wood</u> , Thomas Rendall, Christian Allen and Laurence Kedward, University of Bristol, UK
15:00 – 15:20	Conversion of 3D topology and shape optimization results to modifiable CAD models	<u>Ronald Bartz</u> , Thilo Franke and Sierk Fiebig, Volkswagen AG, Germany
15:20 – 15:40	Efficient techniques to handle geometric constraints in large shape optimization problems with vertex morphing	<u>Ihar Antonau</u> , Armin Geiser and Kai-Uwe Bletzinger, Technical University of Munich, Germany
15:40	<i>Conference close</i>	

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