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

PROVISIONAL CONFERENCE PROGRAMME

The conference programme is provisional and may be subject to amendment

MONDAY 18 JULY 2022	
08:15 – 09:00	*Registration and coffee*
09:00 – 09:15	**Welcome and Opening**
09:15 – 10:00	**Keynote: Selected challenges in multi-disciplinary optimization and design for manufacturing in aeronautics** Dr Ingrid Lepot, Cenaero, Belgium
Session 1: Topology Optimization I	
10:00 – 10:20	Simultaneous sizing, layout and topology optimization of stiffened panels considering postbuckling behavior	Sheng Chu, 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 Suguang Dou, 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 Vassili Toropov, Queen Marry 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	Enrico Stragiotti, François-Xavier Irisarri and Cédric Julien, ONERA, France; Joseph Morlier, ISAE-Supaero, France
11:20 – 11:40	*Refreshments*
Session 2: Optimisation Under Uncertainty	
11:40 – 12:00	Overview and comparison of reliability analysis techniques based on different multi-fidelity Gaussian processes	Romain Espoeys, 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	Yongxing Wang, 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	Themistoklis Skamagkis, 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	Long Liu, Huaiyuan Gu and Jonathan Cooper, University of Bristol, UK
13:00 – 14:00	*Lunch*

Session 3: Manufacturing Systems		
14:00 – 14:20	PDE based milling constraints for structural problems	Kristian E. Jensen, COMSOL Multiphysics®, Denmark
14:20 – 14:40	Space-time topology optimization considering elastic anisotropy in wire and arc additive manufacturing	Kai Wu, 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	Tom De Weer and Karl Meerbergen, KULeuven, Belgium; Nicolas Lammens, Siemens, Belgium
15:00 – 15:20	On controlling microstructure through topology optimization for additive manufacturing	Vibhas Mishra, Can Ayas, Matthijs Langelaar and Fred van Keulen, Delft University of Technology, Netherlands
15:20 – 15:40	Lattice optimization using small scale homogenization approaches	Rob Hewson, Matthew Santer, Ryan Murphy, Morgan Nightingale and Dilaksan Thillaithevan, Imperial College London, UK
15:40 – 16:00	*Refreshments*	
Session 4: Greener Aviation		
16:00 – 16:20	A generic optimisation framework for greener aviation (using modelica and python)	Philipp Gentz, Indi Tristanto and Shahrokh Shahpar, Rolls-Royce, UK
16:20 – 16:40	Towards a design framework for high pressure turboexpanders	Joshua Kelly, Sebastiano Fichera and Sebastian Timme, University of Liverpool, UK
16:40 – 17:00	Flexible multi-disciplinary design optimisation of a hydrogen powered commercial aircraft using open-source methods and tools	Ria Dunjako, Olivia Jelks, Sarah McGowen, Bridget Eke and Gregory de Boer, University of Leeds, UK; Martin Muir, Airbus Central Research and Technology, UK
17:00	*End of day one*	
	Conference photograph	
	Reception and dinner	

TUESDAY 19 JULY 2022		
08:55 – 09:40	**Keynote: Multiscale multiphysics topology optimization**	Professor H Alicia Kim**,** University of California, USA
Session 5: Topology Optimization II		
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 Vassili Toropov, Queen Mary University of London, UK
10:00 – 10:20	Topology optimization using the constrained natural element method	Yanda Chen, Eric Monteiro, Imade Koutiri and Véronique Favier, HESAM Universite, France
10:20 – 10:40	Geometrically nonlinear topology optimisation for stiffened shell structures	Peter Dunning, 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; Osvaldo Querin, University of Leeds, UK
11.00 – 11.20	*Refreshments*	
Session 6: Heat Transfer Optimization		
11:20 – 11:40	Level set-based topology optimization for conjugate heat transfer problems with turbulent flows	Lise Noel, 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	Foteini Zagklavara, Peter Jimack, Nikil Kapur, Osvaldo 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	Muhammad Raihan, Harvey Thompson, Osvaldo 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	Simon Knecht 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	Atul Singh, David Toal and Edward Richardson, University of Southampton, UK; Claus Ibsen, Vestas aircoil A/S, Denmark
13:00 – 14:00	*Lunch*	

Session 7: Shape Optimization & Sensitivity Analyses		
14:00 – 14:20	Eulerian shape optimization by density advection using a three-field approach	Thilo Franke, Ronald Bartz and Sierk Fiebig, Volkswagen AG, Germany
14:20 – 14:40	A deep reinforcement learning framework for drag reduction in flow over a 2D square cylinder	Promod Mudiyanselage, Zinedine Khatir and Florimond Gueniat, Birmingham City University, UK
14:40 – 15:00	Volume of sold parameterisation using cellular automata for aerodynamic optimisation	Maximilian Wood, 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	Ronald Bartz, Thilo Franke and Sierk Fiebig, Volkswagen AG, Germany
15:20 – 15:40	*Refreshments*	
15:40 – 16:00	Shape optimization of the MEXICO wind turbine under flow uncertainties using polynomial chaos expansion and continuous adjoint	M. Erfan Farhikhteh, E. M. Papoutsis-Kiachagias and K. C. Giannakoglou, National Technical University of Athens, Greece
16:00 – 16:20	Efficient techniques to handle geometric constraints in large shape optimization problems with vertex morphing	Ihar Antonau, Armin Geiser and Kai-Uwe Bletzinger, Technical University of Munich, Germany
16:20 – 16:40	Polynomial-type extrapolation-based reanalysis: dealing with computational challenges in large-scale engineering design optimisation	Shahin Jalili, University of Aberdeen, UK; Harvey Thompson, University of Leeds, UK
16:40	*Conference close*	