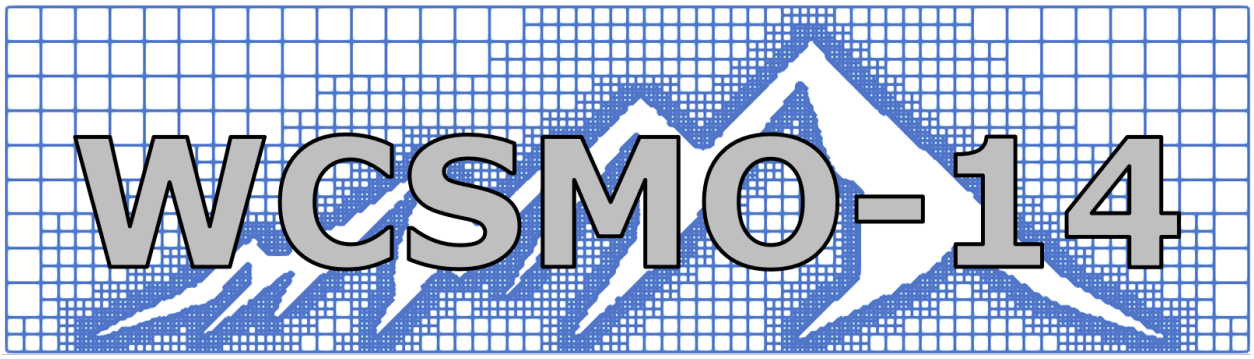
WCSMO-14

Program

Version: June 9, 2021



14th World Congress of Structural and Multidisciplinary Optimization

June 13-18, 2021

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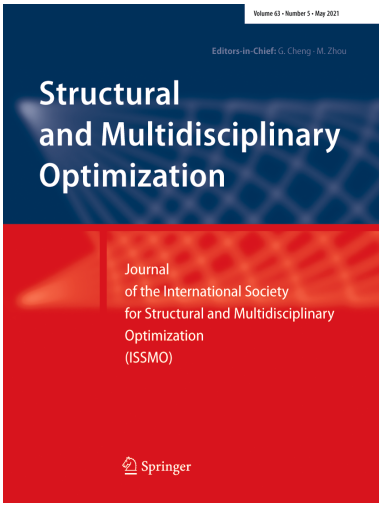

Table of Content

Welcome to WCSMO-14

On behalf of the International Society for Structural and Multidisciplinary Optimization (ISSMO), we welcome you to the 14th World Congress of Structural and Multidisciplinary Optimization (WCSMO-14) held online from the June 13 to 18, 2021.

Originally, WCSMO-14 was scheduled to take place at the beautiful campus of the University of Colorado in Boulder, USA. However, due to the COVID-19 pandemic and its impact on everybody's life, traveling to Boulder became impossible. Thus, the local organizing committee in consultation with the executive committee of ISSMO decided to convert WCSMO-14 into an all virtual conference.

While there are undoubtedly many downsides to a virtual conference, this conference format lowers the cost of attendance and allows participation by researchers who would not be able to travel to the US. Another important benefit of a virtual conference is the drastically reduced carbon footprint. Thus, while a lot of us will miss meeting colleagues and friends in person, there are also a few positive aspects of WCSMO-14 being online.

WCSMO-14 will feature 466 technical talks, two invited plenary talks, four State-of-the-Art talks, and ten socializing events. Furthermore, the General Assembly of ISSMO will be held during the conference. To accommodate the different time zones of participants around the globe, the sessions are grouped into two blocks: a *morning block* from 7:00 - 11:00 AM US Mountain Daylight Time (MDT) and an *afternoon block* from 6:00 - 10:00 PM MDT. A link to an online tool for converting these times to your local time is provided in the program.

The online format of WCSMO-14 allows for a unique approach to attending the technical talks. Starting June 1, 2021, registered attendees will be able to watch the recordings of all presentations. The recordings will be available past the conference, through August 1st, 2021. At the technical session scheduled during the week of the conference, each presenter will briefly introduce her/his talk in no-more than two minutes. The introduction of all presentations of a session is followed by an unmoderated poster-style discussion in breakout rooms. Participants will be able to join the poster-style discussions of presentations of their interest, conveniently switching between sessions and presentations. Participants are strongly encouraged to watch the recordings of the presentations and post questions before the live session featuring the presentations of interest.

To enhance the interaction among attendees and to promote the lively exchange of ideas, several socializing events are scheduled. Outside these events, participants are encouraged to meet informally in the virtual networking lounge. It is recommended that participants familiarize themselves with the virtual conference platform and other online features. Links to a set of training videos are provided in this program.

We hope that you will enjoy WCSMO-14 and, please, do not hesitate to contact us if you have any questions or comments. Your feedback is appreciated very much.

The Local Organizing Committee of WCSMO-14

Alireza Doostan, John Evans, James Guest, Kurt Maute, Julian Norato

About ISSMO and WCSMO

The International Society for Structural and Multidisciplinary Optimization (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 optimization 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 optimization
- 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 optimization 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 optimization (SMO), by means of international meetings having a high scientific standard. Host selection criteria for these meetings 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)
- Braunschweig, Germany in 2017 (WCSMO-12)
- Bejing, China in 2019 (WCSMO-13)

ISSMO Executive Committee:

Wei Chen, President	Northwestern University
Alicia Kim, Secretary General	University of California, San Diego
Ming Zhou, Vice President	Altair Engineering Inc.
Qing Li, Vice President	University of Sydney
Erik Lund, Treasurer	Aalborg University
Pierre Duysinx	University of Liège
Xu Guo	Dalian University of Technology
Ole Sigmund	Technical University of Denmark
Gengdong Cheng, Past President	Dalian University of Technology
James K. Guest, Past Secretary General	Johns Hopkins University

Organization of WCSMO-14

Local organizing Committee:

John Evans	University of Colorado Boulder
Alireza Doostan	University of Colorado Boulder
James K. Guest	Johns Hopkins University
Kurt Maute (conference chair)	University of Colorado Boulder
Julian Norato	University of Connecticut

International Paper Committee (IPC):

Alireza Doostan	University of Colorado Boulder
Alicia Kim (IPC chair)	University of California, San Diego
Samy Missoum	University of Arizona
Yoo Jeong Noh	Pusan National University
Matthias Wallin	Lund University
Peng Wei	South China University of Technology

Virtual Conference Platform

The virtual conference platform has been built and operated by the Denver-based company, Image Audiovisuals Inc. All participants will receive an email prior to June 1, 2021, with the web address of the login page and instructions for logging in.

The virtual conference platform features several functions that allow the participants to assemble an individual conference schedule, participate in plenary and technical sessions and socializing events. The technical sessions and the *Coffee Break* room will be using *Zoom*. The *Meet and Greet* networking and socializing space will be using *Wonder.me*. All participants are strongly encouraged to familiarize themselves with these functions prior to the start of the live part of the conference on June 13, 2021.

All attendees need a *Zoom* account. Free *Zoom* accounts can be created at https://zoom.us/freesignup/. If possible, attendees should use the same email address they used for registering for the conference when creating their *Zoom* account. If attendees already have a *Zoom* account under a different email address, this will work too.

Please, visit the following web-site for training video for participants, presenters, and session chairs:

http://www.wcsmo14.org/instruction-and-training-videos/

The videos will be available May 28. In addition, questions to frequently asked questions can be found at:

https://www.wcsmo14.org/faqs/

Code of Conduct

All attendees of WCSMO-14 have agreed by registering for the conference to the following code of conduct:

- The recording and/or transmission of sessions in any format is strictly prohibited. You agree to not reproduce or repurpose presentation materials in any way without the express consent from the presenter. Recording, copying, or taking screen shots of Q&A or any chat room activity that takes place in the virtual conference is prohibited as violation of copyright.

- All attendees are expected to show respect and courtesy to other attendees. There will be zero tolerance for any form of discrimination or harassment. All communication should be appropriate for a professional audience including people of all backgrounds. All participants, including, but not limited to, attendees, speakers, volunteers, exhibitors, staff members, and service providers are expected to abide by this policy. WCSMO-14 reserves the right to take any action deemed necessary and appropriate, including immediate removal from the WCSMO-14 virtual platform without warning or refund, in response to any incident of unacceptable behavior.

Acknowledgments

WCSMO-14 would not have been possible without the excellent support of a large number of people who the local organizing committee would like to thank.

University of Colorado Conference Services:

Jessica Follett, Amy Martinez

Image Audiovisuals Inc:

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WCSMO-14 Website Development:

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Student Support Team:

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Plenary and State-of-the-Art Talks

Plenary Talks

Plenary - 1

Monday, June 14, 20201, 7:00 AM - 7:50 AM MDT, Auditorium

Structural Optimization. Questions from Boeing

Vladimir Balabanov, Boeing

Abstract

In this presentation Vladimir Balabanov will share his experiences and views on Structural Optimization that he encounters at Boeing. Structural Optimization has grown a lot in the past couple of decades. So did other disciplines and fields. How is Structural Optimization looked at in Boeing now? What is its relationship with the other disciplines and fields? Vladimir will share misconceptions, frustrations, and successes, illustrated with examples. As an invitation to discussion that will follow the presentation, Vladimir will state the questions and possible directions where in his opinion structural optimization can continue growing to get more recognition and success at Boeing.

Plenary - 2

Tuesday, June 15, 20201, 6:00 PM - 6:50 PM MDT, Auditorium

Autonomous Optimization and Control of Energy Systems

Andrey Bernstein, National Renewable Energy Laboratory

Abstract

Power and energy systems undergoing significant changes. Electric power systems are integrating much more distributed and renewable energy resources such as rooftop solar photovoltaics and small battery systems. Transportation sectors such as personal vehicles are becoming electrified. The building sector experiences integration of smart appliances and thermostats in homes and advanced controls for commercial buildings. This talk focuses on the question of how to coordinate and optimize millions of devices in these modern energy systems in real time. Specifically, we present an algorithmic framework for real-time optimization of general networked systems and develop online distributed algorithms that steer the system towards the optimal system trajectory. The problem is modeled as a dynamic optimization problem with time-varying performance objectives and engineering constraints. Both model-based (first-order, gradient-based) and model-free (zero-order) algorithms are developed. For zero-order algorithms, the gradient-descent step that involves the gradient of the objective function (and hence requires networked system model) is replaced by its zero-order approximation with two function evaluations. The evaluations are performed using the measurements of the system output, hence giving rise to a feedback interconnection, with the optimization algorithm serving as a feedback controller. We provide insights on the stability and tracking properties of this interconnection. Finally, we apply this methodology to a dynamic three-phase optimal power flow problem in a distribution system, for real-time reference power tracking and voltage regulation.

State-of-the-Art Talks

Continuing the tradition of previous WCSMO conferences, current and emerging research in structural and multidisciplinary design optimization will be presented in the following State-of-the-Art (SOTA) talks:

SOTA - Talks 1
Thursday, June 17, 6:00 PM - 6:50 PM, Auditorium

Topology optimization: methodologies and application
Josephine Carstensen, Massachusetts Institute of Technology

From Surrogate Modeling to Physics-informed Neural Networks – What Has Machine Learning Done for Engineering Analysis and Design?
Felipe Viana , University of Central Florida

SOTA - Talks 2
Friday, June 18, 7:00 AM - 7:50 AM, Auditorium

Digital transformation and optimization
Yoo Jeong Noh, Pusan National University

System analysis and design in uncertainty
Mathieu Balesdent, ONERA - The French Aerospace Lab

Socializing Events

To promote and enhance the interaction of attendees outside the technical sessions, WCSMO-14 will feature several socializing events. Some of these are mainly for entertainment, some focus on networking and career development, and others provide a forum for discussions around technical topics.

Please, note that for some of these events we ask attendees to sign-up in advance. This will ease the planning of the specific event and event organizers can reach out to the participants in advance. Whether signing-up is required is indicated with each event.

ISSMO Women Networking

The ISSMO Women Networking Event will be held twice during WCSMO-14. The tentative content includes a mentoring session featuring several female panelists and a networking session. This event aims to create a venue for junior and senior women researchers from varying backgrounds to share their career paths, career development options, work-life balance, and become mentors or mentees. The event also provides opportunities for researchers to discuss research interests and establish collaborations. All female researchers at all career stages are invited to attend.

ISSMO Women Networking - I (Socializing 1)

Organizer:	X. Shelly Zhang, University of Illinois Urbana-Champaign, zhangxs@illinois.edu
Time:	Sunday, June 13, 7:00 PM – 7:50 PM MDT, Networking Lounge: Coffee Break Room
Panelists:	Wei Chen, H. Alicia Kim, Josephine V. Carstensen
Note:	Sign-up is required; please, visit: Sign-up Page

ISSMO Women Networking - II (Socializing 8)

Organizer:	X. Shelly Zhang, University of Illinois Urbana-Champaign, zhangxs@illinois.edu
Time:	Thursday, June 17, 10:00 AM – 11:00 AM MDT, Networking Lounge: Coffee Break Room
Panelists:	Rekha Rao, Lucia Mirabella, Hortense Gerardo
Note:	Sign-up is required; please, visit: Sign-up Page

Young Investigator Workshop

Young professionals (i.e., professionals less than 40 years of age) are invited to participate in a Young Investigator Workshop. During this workshop, young professionals will have an

opportunity to ask questions of successful mid- and late-career professionals and researchers in an intimate small group setting. Workshop topics of interest include: Planning for a Career in Research in Academia or Industry, Surviving the Job Search, Getting Started in a New Position, Preparing Your First Grant Proposal, Maintaining a Work-Life Balance. Interested individuals are encouraged to participate in either the evening workshop on June 15 or the morning workshop on June 16.

Young Investigator Workshop - I (Socializing 5)

Organizer:	John Evans, University of Colorado Boulder, john.a.evans@colorado.edu
Time:	Tuesday, June 15, 9:00 PM – 10:00 PM MDT, Networking Lounge: Coffee Break Room
Panelists:	Heng Chi, Junji Kato, Qing Li, Gil-Ho Yoon, Weihong Zhang
Note:	Sign-up is required; please, visit: Sign-up Page

Young Investigator Workshop - II (Socializing 6)

Organizer:	John Evans, University of Colorado Boulder, john.a.evans@colorado.edu
Time:	Wednesday, June 16, 10:00 AM – 11:00 AM MDT, Networking Lounge: Coffee Break Room
Panelists:	Pierre Duysinx, Graeme Kennedy, Claus Pedersen, Emilio Carlos Nelli Silva, Mathias Wallin
Note:	Sign-up is required; please, visit: Sign-up Page

The Altair Conference Talk Show

One of the major disadvantages of WCSMO-14 being virtual is the lack for social gatherings after the technical sessions. The goal of this one-hour live event is to better engage the attendees and to add a personal touch to WCSMO-14 that is typically missing from virtual conferences. To acknowledge the generous contribution from WCSMO-14's Platinum sponsor, Altair, this event is named the *The Altair Conference Talk Show*. It will feature a colloquial conversation about mainly non-technical topics; just like colleagues meeting after the technical sessions at an in-person conference for dinner and chat. The idea is to do something similar at WCSMO-14 in a talk show style event where three guests and one host will engage in some hopefully interesting and entertaining discussions, which will be live broadcasted via zoom. The audience will be able to ask questions via chat.

The Altair Conference Talk Show - I (Socializing 2)

Organizer:	Kurt Maute, University of Colorado Boulder, maute@colorado.edu
Time:	Monday, June 14, 10:00 AM – 11:00 AM MDT, Networking Lounge: Coffee Break Room (Breakout 1)
Guests:	Wei Chen, Glaucio Paulino, Ole Sigmund
Note:	No sign-up is required

The Altair Conference Talk Show - II (Socializing 3)

Organizer:	Kurt Maute, University of Colorado Boulder, maute@colorado.edu
Time:	Monday, June 14, 9:00 PM – 10:00 PM MDT, Networking Lounge: Coffee Break Room
Guests:	Gengdong Cheng, Yoon Young Kim, Daniel Tortorelli
Note:	No sign-up is required

Design Optimization in Practice (Socializing 10)

This event will feature a diverse industry panel with participants from different areas. The panelists will discuss where and how design optimization is currently used, what challenges it faces, and what issues need more attention from the research community. Additional topics may include career pathways in the panelists' companies related to design optimization. Panelists will provide advice for young researchers currently working on design optimization how to prepare themselves for a successful career in industry. The audience will be able to ask questions via chat.

Organizer:	Julian Norato, University of Connecticut, julian.norato@uconn.edu
Time:	Friday, June 18, 10:00 AM – 11:00 AM, Networking Lounge: Coffee Break Room
Panelists	Vladimir Balabanov, Julien Cortial, Sierk Fiebig, Matthew Lynch, Yuqing Zhou
Note:	No sign-up is required

Discussion Roundtables

High Performance Computing (HPC) in large-scale structural optimization (Socializing 2)

The roundtable will focus on the use of High Performance Computing (HPC) in large-scale structural optimization. The discussion will cover, but is not limited to, subjects such as: How to get started with HPC for structural optimization, low level (MPI/PETSc) vs. high level (FEniCS, deal.ii, MFEM, etc.) frameworks, design of preconditioners - matrix vs. matrix-free, dynamics and multiphysics, structured vs. unstructured meshes, and remeshing in parallel and the use of accelerators (GPU/FPGA).

Organizer:	Niels Aage, Technical University of Denmark, naage@mek.dtu.dk
Time:	Monday, June 14, 10:00 AM – 11:00 AM MDT, Networking Lounge: Coffee Break Room (Breakout 2)
Note:	Sign-up is required; please, visit: Sign-up Page

Software design, development and management practices (Socializing 7)

This Roundtable focuses on all aspects of software design, development and management practices to produce Multidisciplinary Design, Analysis and Optimization (MDAO) software for High Performance Computing (HPC) applications. This Roundtable is a venue for researchers, developers and end-users from academia, industry and government to share experiences, ideas and best practices applied to HPC software development and operations. Topics of interest include, but are not limited to: Software development team management, Software development and operations, Software test repository management, Software design patterns, HPC software libraries, HPC algorithmic design, Performance portability, Open source software, Test driven development, Hybrid parallel computing, Parallel computing, and GPU acceleration.

Organizer:	Miguel Aguilo, Sandia National Laboratories, maguilo@sandia.gov
Time:	Wednesday, June 16, 9:00 PM – 10:00 PM MDT, Networking Lounge: Coffee Break Room
Note:	Sign-up is required; please, visit: Sign-up Page.

Artificial Intelligence and Machine Learning (Socializing 9)

This round table discusses challenges and opportunities in developing a coherent framework that enables blending conservation laws, physical principles, and/or phenomenological behaviors expressed by differential equations with the vast data sets available in many fields of engineering, science, and technology. At the intersection of probabilistic machine learning, deep learning, and scientific computations, we will discuss promising new directions for harnessing the long-standing developments of classical methods in applied mathematics

and mathematical physics to design learning machines with the ability to operate in complex domains without requiring large quantities of data. In particular, we will discuss three complementary directions: (1) data-efficient learning machines capable of leveraging the underlying laws of physics, expressed by time dependent and non-linear differential equations, to extract patterns from high-dimensional data generated from experiments, (2) novel numerical algorithms that can seamlessly blend equations and noisy multi-fidelity data, infer latent quantities of interest (e.g., the solution to a differential equation), and naturally quantify uncertainty in computations, and (3) machine learning optimization algorithms to accelerate design optimization under uncertainty. We will try to expose some open challenges in solving forward, inverse, data assimilation, design optimization, model discovery and uncertainty quantification problems using the emerging field of physics-informed machine learning.

Organizer:	Raissi Maziar and Subhayan De, University of Colorado Boulder, maziar.raissi@colorado.edu, subhayan.de@colorado.edu
Time:	Thursday, June 17, 9:00 PM – 10:00 PM MDT, Networking Lounge: Coffee Break Room
Note:	Sign-up is required; please, visit: Sign-up Page.

Program Overview

About the Conference Program

One of the primary challenges of a virtual international conference, such as WCSMO-14, is the diversity of the time zones of the participants.
To accommodate these different time zones, the sessions are grouped into two blocks: a *morning block* from 7:00- 11:00 AM US Mountain Daylight Time (MDT) and an *afternoon block* from 6:00 - 10:00 PM MST. A time conversion table is given below. An online tool to convert MDT times into local times can be found at: Time Zone Converting Tool

	Morning block 7:00 – 11:00 am MDT	Afternoon block 6:00 – 10:00 pm MDT
Sydney	11:00 PM – 3:00 AM	10:00 AM – 2:00 PM
Tokyo	10:00 PM – 2:00 AM	9:00 AM – 1:00 PM
Beijing	9:00 PM – 1:00 AM	8:00 AM – 12:00 PM
New Delhi	6:30 PM – 10:30 PM	5:30 AM – 9:30 AM
Moscow	4:00 PM – 8:00 PM	3:00 AM – 7:00 AM
Paris	3:00 PM – 7:00 PM	2:00 AM – 6:00 AM
São Paulo	10:00 AM – 2:00 PM	9:00 PM – 1:00 AM
New York	9:00 AM – 1:00 PM	8:00 PM – 12:00 AM
San Diego	6:00 AM – 10:00 AM	5:00 PM – 9:00 PM

The overall schedule is shown in the table below. For assignment of talks to sessions and sessions to time slots, we primarily considered the thematic fit but also the time zone of the presenter. Strictly assigning presenters to the most convenient time slot within the presenters business hours would have led to a geographically divided conference. Instead, to promote geographical diversity, we assigned presenters from East Asia to the early morning block slots. These slots do not require attendees from East Asia to stay up too late. This scheduling approach led to a slight imbalance between the two blocks with overall more presentations in the morning blocks. Furthermore, the originally schedule Friday evening block was no longer needed.

	Time (MDT)	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
Morning Block	7:00 – 7:50 AM		**Plenary - 1**	Parallel session	**General Assembly**	Parallel session	**SOTA – Talks 2**
	8:00 – 8:50 AM		Parallel session	Parallel session	Parallel session	Parallel session	Parallel session
	9:00 – 9:50 AM		Parallel session	Parallel session	Parallel session	Parallel session	Parallel session
	10:00 – 11:00 AM		Socializing Events	Socializing Events	Socializing Events	Socializing Events	Socializing Events
Evening Block	6:00 – 6:50 PM		Parallel session	**Plenary - 2**	Parallel session	**SOTA – Talks 1**	
	7:00 – 7:50 PM	Socializing Events	Parallel session	Parallel session	Parallel session	Parallel session	
	8:00 – 8:50 PM		Parallel session	Parallel session	Parallel session	Parallel session	
	9:00 – 10:00 PM		Socializing Events	Socializing Events	Socializing Events	Socializing Events	

Presentations and Session Format

The recordings of the presentations will be available online through the conference platform from June 1, 2021, through August 1, 2021.

The technical sessions take place during the week of the conference, from June 13 through 18. Up to five 50-minute sessions run in parallel. Each session is assigned a *Zoom* room. At the beginning of a session, each presenter will briefly introduce her/his talk in no-more than two minutes. After this introduction, the session is split up into breakout rooms, one for each presenter. In these breakout rooms, presenters and participants can discuss the presenter's work. Participants can join the discussions of presentations of their interest, conveniently switching between sessions and presentations.

Participants are strongly encouraged to watch the recordings of the presentations and post questions prior to the live session featuring the presentations of interest.

Sunday - June 13, 2021

Evening Sessions – 6:00 - 10:00 PM MDT

Time: 7:00 PM - 7:50 PM MDT

Room	Session
Lounge	Socializing - 1

Monday - June 14, 2021

Morning Sessions – 7:00 - 11:00 AM MDT

Time: 7:00 AM - 7:50 AM MDT

Room	Session
Auditorium	Plenary - 1

Time: 8:00 AM - 8:50 AM MDT

Room	Session
A	Design optimization considering fracture, damage and fatigue - I
B	Inverse problems and parameter identification - I
C	Design optimization for optics and electromagnetics applications - I
D	Design optimization of heat exchangers and other thermo-fluid applications - I
E	Multi-scale topology optimization - I

Time: 9:00 AM - 9:50 AM MDT

Room	Session
A	Design for biomedical applications - I
B	Robust design and reliability-based design optimization - I
C	Design optimization for optics and electromagnetics applications - II
D	Design optimization of heat exchangers and other thermo-fluid applications - II

E	Multi-scale topology optimization - II

Time: 10:00 AM - 11:00 AM MDT

Room	Session
Lounge	Socializing - 2

Monday - June 14, 2021

Evening Sessions – 6:00 - 10:00 PM MDT

Time: 6:00 PM - 6:50 PM MDT

Room	Session
A	Design for biomedical applications - II
B	Robust design and reliability-based design optimization - II
C	Multi-scale topology optimization - III

Time: 7:00 PM - 7:50 PM MDT

Room	Session
A	Design optimization considering fracture, damage and fatigue - II
B	Inverse problems and parameter identification - II
C	Robust design and reliability-based design optimization - III
D	Design optimization for optics and electromagnetics applications - III

Time: 8:00 PM - 8:50 PM MDT

Room	Session
A	Robust design and reliability-based design optimization - IV
B	Design optimization for optics and electromagnetics applications - IV
C	Multi-scale topology optimization - IV

Time: 9:00 PM - 10:00 PM MDT

Room	Session
Lounge	Socializing - 3

Tuesday - June 15, 2021

Morning Sessions – 7:00 - 11:00 AM MDT

Time: 7:00 AM - 7:50 AM MDT

Room	Session
A	Design of compliant mechanisms
B	Reduced-order models in design optimization
C	Design optimization with applications to aerospace problems - I
D	Machine learning for design optimization - I
E	Design optimization for advanced manufacturing - I

Time: 8:00 AM - 8:50 AM MDT

Room	Session
A	Raphael “Rafi” T. Haftka Memorial Session - I
B	Design optimization with applications to aerospace problems - II
C	Topology optimization for fluids - I
D	Machine learning for design optimization - II
E	Design optimization for advanced manufacturing - II

Time: 9:00 AM - 9:50 AM MDT

Room	Session
A	Raphael “Rafi” T. Haftka Memorial Session - II
B	Evolutionary and zero-order methods for structural optimization - I
C	Moving morphable component methods - I
D	Design optimization with applications to aerospace problems - III
E	Design optimization for advanced manufacturing - III

Time: 10:00 AM - 11:00 AM MDT

Room	Session
Lounge	Socializing - 4

Tuesday - June 15, 2021

Evening Sessions – 6:00 - 10:00 PM MDT

Time: 6:00 PM - 6:50 PM MDT

Room	Session
Auditorium	Plenary - 2

Time: 7:00 PM - 7:50 PM MDT

Room	Session
A	Evolutionary and zero-order methods for structural optimization - II
B	Topology optimization for fluids - II
C	Design optimization of heat exchangers and other thermo-fluid applications - III

Time: 8:00 PM - 8:50 PM MDT

Room	Session
A	Moving morphable component methods - II
B	Topology optimization for fluids - III
C	Design optimization of heat exchangers and other thermo-fluid applications - IV

Time: 9:00 PM - 10:00 PM MDT

Room	Session
Lounge	Socializing - 5

Wednesday - June 16, 2021

Morning Sessions – 7:00 - 11:00 AM MDT

Time: 7:00 AM - 7:50 AM MDT

Room	Session
Auditorium	ISSMO General Assembly

Time: 8:00 AM - 8:50 AM MDT

Room	Session
A	Isogeometric methods in design optimization
B	Optimization of contact and interface problems
C	Design optimization accounting for material nonlinear behavior - I
D	Design optimization for civil enginering and architectural design - I
E	Design of composite structures - I

Time: 9:00 AM - 9:50 AM MDT

Room	Session
A	Topology optimization for solid mechanics
B	Design optimization accounting for material nonlinear behavior - II
C	Design optimization for civil enginering and architectural design - II
D	Design of composite structures - II
E	Novel topology optimization techniques - I

Time: 10:00 AM - 11:00 AM MDT

Room	Session
Lounge	Socializing - 6

Wednesday - June 16, 2021

Evening Sessions – 6:00 - 10:00 PM MDT

Time: 6:00 PM - 6:50 PM MDT

Room	Session
A	Design of composite structures - III
B	Novel topology optimization techniques - II
C	Machine learning for design optimization - III
D	Design optimization for advanced manufacturing - IV

Time: 7:00 PM - 7:50 PM MDT

Room	Session
A	Design of composite structures - IV
B	Novel topology optimization techniques - III
C	Machine learning for design optimization - IV
D	Design optimization for advanced manufacturing - V

Time: 8:00 PM - 8:50 PM MDT

Room	Session
A	Design of composite structures - V
B	Novel topology optimization techniques - IV
C	Machine learning for design optimization - V
D	Design optimization for advanced manufacturing - VI

Time: 9:00 PM - 10:00 PM MDT

Room	Session
Lounge	Socializing - 7

Thursday - June 17, 2021

Morning Sessions – 7:00 - 11:00 AM MDT

Time: 7:00 AM - 7:50 AM MDT

Room	Session

A	Multi-objective topology optimization
B	Level set methods
C	Design optimization of acoustic materials and devices - I
D	Shape optimization - I
E	Design optimization considering eigenfrequency and dynamics - I

Time: 8:00 AM - 8:50 AM MDT

Room	Session
A	Design optimization with applications to automotive problems - I
B	Design of metamaterials - I
C	Surrogate modeling for design optimization - I
D	Shape optimization - II
E	Design optimization considering eigenfrequency and dynamics - II

Time: 9:00 AM - 9:50 AM MDT

Room	Session
A	Stress-constrained topology optimization - I
B	Design optimization with applications to automotive problems - II
C	Shape optimization - III
D	Design optimization considering eigenfrequency and dynamics - III
E	Novel topology optimization techniques - V

Time: 10:00 AM - 11:00 AM MDT

Room	Session
Lounge	Socializing - 8

Thursday - June 17, 2021

Evening Sessions – 6:00 - 10:00 PM MDT

Time: 6:00 PM - 6:50 PM MDT

Room	Session
Auditorium	SOTA Talks - 1

Time: 7:00 PM - 7:50 PM MDT

Room	Session
A	Stress-constrained topology optimization - II
B	Design optimization of acoustic materials and devices - II
C	Design of metamaterials - II
D	Design optimization for advanced manufacturing - VII

Time: 8:00 PM - 8:50 PM MDT

Room	Session
A	Surrogate modeling for design optimization - II
B	Design optimization considering eigenfrequency and dynamics - IV
C	Machine learning for design optimization - VI

Time: 9:00 PM - 10:00 PM MDT

Room	Session
Lounge	Socializing - 9

Friday - June 18, 2021

Morning Sessions – 7:00 - 11:00 AM MDT

Time: 7:00 AM - 7:50 AM MDT

Room	Session
Auditorium	SOTA Talks - 2

Time: 8:00 AM - 8:50 AM MDT

Room	Session
A	Multi-material topology optimization

B	Software
C	Truss topology optimization - I
D	Topology optimization considering uncertainty - I
E	Optimization algorithms - I

Time: 9:00 AM - 9:50 AM MDT

Room	Session
A	Topology optimization with manufacturing constraints
B	Truss topology optimization - II
C	Topology optimization considering uncertainty - II
D	Optimization algorithms - II

Time: 10:00 AM - 11:00 AM MDT

Room	Session
Lounge	Socializing - 10

Detailed Program

Sunday - June 13, 2021

Evening Sessions – 6:00 - 10:00 PM MDT

Socializing - 1

Day: Sunday - June 13, 2021

Time: 7:00 PM - 7:50 PM MDT

Room: Lounge

Event	Organizer
ISSMO Women Networking I (Coffee Break Room)	X. Shelly Zhang

Monday - June 14, 2021

Morning Sessions – 7:00 - 11:00 AM MDT

Plenary - 1

Day: Monday - June 14, 2021

Time: 7:00 AM - 7:50 AM MDT

Room: Auditorium

Chair: Wei Chen

Title	Presenter
Structural Optimization. Questions from Boeing	Vladimir Balabanov

Design optimization considering fracture, damage and fatigue - I

Day:	Monday - June 14, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	A
Chair and co-Chair:	Marco Montemurro and Alejandro Aragón

ID	Title	Presenter
93	*Topology optimization of damage-resistant structures with a predefined load-bearing capacity* by Barbier, T., Shakour, E., Sigmund, O., Lombaert, G. and Schevenels, M.	Tobias Barbier
143	*Fail-safe optimization of 3D tubular frame structures under stress and fatigue constraints* by Dou, S. and Stolpe, M.	Suguang Dou
207	*First-Order Reliability Approach for Fatigue Resistant Topology Optimization of Elastoplastic Structures* by Logo, J., Tauzowski, P. and Blachowski, B.	Piotr Tauzowski
254	*Formulation of fatigue strength criteria in a topology optimisation method based on NURBS hyper-surfaces* by Refai, K. and Montemurro, M.	Khalil Refai
418	*Topology optimization in fracture mechanics using a level-set method* by Desai, J., Allaire, G. and Jouve, F.	Jeet Desai
479	*Material Optimization to Enhance Delamination Resistance of Heterogeneous Structures* by Singh, S., Pflug, L. and Stingl, M.	Sukhminder Singh

Inverse problems and parameter identification - I

Day: Monday - June 14, 2021

Time: 8:00 AM - 8:50 AM MDT

Room: B

Chair and co-Chair: Paolo Venini and Akira Saito

ID	Title	Presenter
92	*Numerical experiments for cavity shape identification analysis using hammering test data based on level-set type topology optimization* by Kurahashi, T., Murakami, Y., Toyama, S., Ikeda, F., Iyama, T. and Ihara, I.	Takahiko Kurahashi
94	*An efficient inverse strategy to estimate loading from strain measurements* by Wilke, D. N. and Kok, S.	Daniel Wilke
208	*Identification of the dynamic response of storage racks: experiments and optimization* by Bernuzzi, C., Rottenbacher, C., Simoncelli, M. and Venini, P.	Paolo Venini
253	*An efficient structural parameter identification method considering non-probabilistic uncertainties and correlations* by Ouyang, H., Liu, J. and Han, X.	Heng Ouyang
260	*An enhanced framework of model calibration using the modular Bayesian approach for identifiability problem* by Jo, H. and Lee, I.	Hwisang Jo
288	*Effects of mode shapes on crack identification based on finite-element model updating and inverse eigenvalue analysis* by Isshiki, J. and Saito, A.	Jun Isshiki
370	*A Robust Design Framework for Sensor Number and Placement Optimization under Uncertainty in Vibration-Based Damage Detection of Composite Structures* by An, H., Youn, B. D. and Kim, H. S.	Haichao An

Design optimization for optics and electromagnetics applications - I

Day:	Monday - June 14, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	C
Chair and co-Chair:	Rasmus Christiansen and Niels Aage

ID	Title	Presenter
17	*Shape Optimization for Electromagnetic Applications in the Frequency Domain* by Jensen, K. E.	Kristian Jensen
60	*Two-layer design for microwave scattering structure using a conductive material and dielectric materials* by Jung, M. and Yoo, J.	Mingook Jung
173	*Shape optimization for the strong routing of light* by Araújo C., J. C. and Wadbro, E.	Juan Carlos Araujo Cabarcas
189	*Multi-Physics Topology Optimization of Photonic Bandgap Metamaterials with Elasticity and Thermal Conductivity Constraints* by Swartz, K. E., White, D. A., Tortorelli, D. A. and James, K. A.	Kenneth Swartz
468	*Shape optimization of a rotating electric machine using a space-time finite element method* by Cesarano, A. and Gangl, P.	Alessio Cesarano

Design optimization of heat exchangers and other thermo-fluid applications - I

Day:	Monday - June 14, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	D
Chair and co-Chair:	Fengwen Wang and Lise Noel

ID	Title	Presenter
61	*Topology optimization of a surface cooler using a continuous adjoint turbulence model* by Quentin, H., Ephraïm, T., Julien, C., Boutros, G. and Maroun, N.	Quentin Holka
95	*Topography optimisation for parallel plate heat exchangers* by Alexandersen, J.	Joe Alexandersen
140	*Topology optimization for conjugated heat transfer based on Darcy flow analysis in industrial software* by Dienemann, R., Pagaldipti, N. and Zhou, M.	Robert Dienemann
182	*Reaction-Diffusion Equation-based Topology Optimization: a novel framework for 2D and 3D Thermal Fluid-Structure System Design* by Li, H., Kondoh, T., Jolivet, P., Yamada, T., Izui, K., Nishiwaki, S. and Furuta, K.	Hao Li
268	*On topology optimization of two fluid heat exchangers and their post-evaluation* by Andreasen, C. S., Rogié, B. and Høghøj, L.	Casper Andreasen

Multi-scale topology optimization - I

Day:	Monday - June 14, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	E
Chair and co-Chair:	Ole Sigmund and Jun Wu

ID	Title	Presenter
115	*Two-scale Concurrent Structural Topology Optimization with Connectable Microstructures* by Liu, P., Kang, Z. and Luo, Y.	Pai Liu
128	*On the utility of cellular designs in mechanical and thermal applications in the context of powder-based additive manufacturing* by Vu, B. N., Wein, F. and Stingl, M.	Bich Ngoc Vu
190	*Optimal and continuous multilattice embedding* by Sanders, E. D., Pereira, A. and Paulino, G. H.	Emily Sanders
252	*Isogeometric Optimisation of Lattice-Skin Structures* by Xiao, X. and Cirak, F.	Xiao Xiao
449	*Multiscale design of coated structures with periodic infill for vibration suppression* by Wadbro, E. and Niu, B.	Eddie Wadbro

Design for biomedical applications - I

Day:	Monday - June 14, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	A
Chair and co-Chair:	Qing Li and Sandilya Kambampati

ID	Title	Presenter
187	*Growth-Driven Optimization of Bone Scaffolds* by Cohen, D., Aboutaleb, S. M., Johnson, A. W. and Norato, J.	David Cohen
201	*Multi-objective design optimization of 3D microarchitectured implants* by Garner, E., Wu, J. and Zadpoor, A.	Eric Garner
266	*Topology Optimization using PETSc: a Python wrapper and extended functionality for the design of biomechanical structures* by Aage, N., Ferguson, S. J. and Helgason, B.	Thijs Smit
439	*Level set topology optimization for artificial tissue vascularization* by Castro, D. d. A., Kambampati, S. and Kim, H. A.	Douglas de Aquino Castro
478	*Adjoint shape optimization for hyperelastic structures and fluid-structure interaction* by Radtke, L., Heners, J. P., Bletsos, G., Rung, T. and Duester, A.	Lars Radtke

Robust design and reliability-based design optimization - I

Day:	Monday - June 14, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	B
Chair and co-Chair:	Christian Gogu and Junho Chun

ID	Title	Presenter
50	*Robust Design Optimization with Design-Dependent Random Input Variables using the Reciprocal First-Order Second-Moment Method* by Kriegesmann, B.	Benedikt Kriegesmann
463	*A Kriging-assisted Hybrid Adaptive Single Loop Approach for Reliability-based Design Optimization* by Zhang, D., Yang, M. and Han, X.	Dequan Zhang
495	*Robust optimization and design space visualization applied on drivetrain design* by Stroobants, J., López, C. and Abedrabbo, G.	Jan Stroobants
548	*A Robust Beam Model for Nonlinear Structural Analysis of Highly Flexible Aircraft Wings through Adaptive Preconditioning* by Solano, D., Sarojini, D., Rajaram, D. and Mavris, D.	David Solano

Design optimization for optics and electromagnetics applications - II

Day:	Monday - June 14, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	C
Chair and co-Chair:	Fred van Keulen and Martin Berggren

ID	Title	Presenter
271	*General method for computing fundamental performance bounds for photonic design problems* by Chao, P., Molesky, S. and Rodriguez, A.	Pengning Chao
298	*Optimizing the electro-momentum coupling in piezoelectric composites* by Kosta, M., Muhafra, A., Pernas-Salomon, R., Amir, O. and Shmuel, G.	Majd Kosta
371	*3D-Printable Large-Area Metalenses Designed using Full-Maxwell based Topology Optimization* by Christiansen, R. E., Lin, Z., Roques-Carmes, C., Soljacic, M. and Johnson, S. G.	Rasmus Christiansen
373	*Non-parametric shape optimization for electromagnetic applications* by Reitzinger, S., Pedersen, C. B., Lange, E., Hoffarth, M. and Stoppelkamp, N.	Stefan Reitzinger
498	*Topology optimization of microwave frequency multiplexers* by Bokhari, A. H., Hassan, E. and Wadbro, E.	Ahmad Bokhari

Design optimization of heat exchangers and other thermo-fluid applications - II

Day:	Monday - June 14, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	D
Chair and co-Chair:	Casper Andreasen and Joe Alexandersen

ID	Title	Presenter
141	*Topology optimization of fluid-to-fluid heat exchangers with body-fitted meshes* by Allaire, G., Dapogny, C., Feppon, F. and Jolivet, P.	Grégoire Allaire
176	*2.5D Topology Optimization of Heat Sinks with Extruded Fins* by Rogie, B., Høghøj, L. and Andreasen, C.	Brice Rogie
185	*Topology Optimization of 2D Heat Exchangers for Improving Heat Exchange Performance based on Isogeometric Analysis* by Liang, X., Li, A., Rollett, A. and Zhang, Y. J.	Xuan Liang
408	*XIGA Level Set-based Topology Optimization for Conjugate Heat Transfer Problems* by Noel, L., Schmidt, M., Doble, K., Evans, J. A. and Maute, K.	Lise Noel

Multi-scale topology optimization - II

Day:	Monday - June 14, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	E
Chair and co-Chair:	Jun Wu and Oliver Weeger

ID	Title	Presenter
212	*Surrogate models of elastic responses from truss lattices for multiscale design* by Jekel, C. F., Swartz, K., White, D. A., Tortorelli, D. A. and Watts, S.	Charles Jekel
249	*Hierarchical Topology Optimization of Stiffened Thin-walled Structures* by Zhou, Z., Wang, B., Zhou, Y., Hao, P. and Shi, Y.	Zitong Zhou
465	*Towards Two-Scale Topology Optimization respecting Buckling on Micro- and Macroscale* by Hübner, D., Wein, F. and Stingl, M.	Daniel Hübner
521	*Stress minimization for lattice structures* by Ferrer, A., Geoffroy-Donders, P. and Allaire, G.	Alex Ferrer
555	*Topology Optimization of Functionally Graded Porous Structures under Transient Loads* by Ramírez-Gil, F. J. and Montealegre-Rubio, W.	Francisco Ramírez-Gil

Socializing - 2

Day: Monday - June 14, 2021

Time: 10:00 AM - 11:00 AM MDT

Room: Lounge

Event	Organizer
The Altair Conference Talk Show I - Guests: Wei Chen, Glaucio Paulino, Ole Sigmund (Coffee Break Room - Breakout 1)	Kurt Maute
Roundtable: High Performance Computing (HPC) in large-scale structural optimization (Room: Coffee Break Room - Breakout 2)	Niels Aage

Monday - June 14, 2021

Evening Sessions – 6:00 - 10:00 PM MDT

Design for biomedical applications - II

Day: Monday - June 14, 2021

Time: 6:00 PM - 6:50 PM MDT

Room: A

Chair and co-Chair: Shapour Azarm and Julian Norato

ID	Title	Presenter
264	*An Overview of Optimization Studies Related to COVID-19* by Jordan, E., Shin, D. E. and Azarm, S.	Elizabeth Jordan
432	*Analysis and Non-deterministic Optimization of Coronary stents under biological and surgical uncertainties* by Liu, N. C., Wilson, T., Swain, M. and Li, Q.	Nai Chun Liu
442	*Identification of a bone growth for an individual patient of idiopathic scoliosis based on medical image data* by Mitsumoto, Y., Nishikawa, K. and Azegami, H.	Yasutaka Mitsumoto
471	*Topology optimization of prosthetic structures for bone remodeling criteria* by Wu, C., Fang, J., Sun, G., Swain, M. V., Steven, G. P. and Li, Q.	Qing Li
487	*Optimization of the Walking Pattern by Utilizing Base Motions Through Singular Value Decomposition* by Guzelbulut, C., Suzuki, K., Hobara, H. and Shimono, S.	Cem Guzelbulut
559	*Topology Optimization incorporating Nonlinear Material and Geometry applied to Coronary Stents* by Wilson, T. J., Thomas, S., Steven, G. P. and Li, Q.	Thomas Wilson

Robust design and reliability-based design optimization - II

Day:	Monday - June 14, 2021
Time:	6:00 PM - 6:50 PM MDT
Room:	B
Chair and co-Chair:	Alireza Doostan and Weifei Hu

ID	Title	Presenter
27	*Exact analytical PDFs of responses and reliabilities for stochastic static and dynamic systems* by Liu, J., Zhou, Z., Chen, G. and Yang, D.	Jiaran Liu
45	*Static and dynamic reliability-based design optimization with multiple most probable points based on direct probability integral method* by Li, X., Chen, G., Wang, Y. and Yang, D.	Xiaolan Li
58	*A novel saddlepoint approximation and its application to structural reliability-based design optimization* by Do, B. and Ohsaki, M.	Bach Do
368	*Reliability-Based Design Optimization Using Gaussian Process of Pouch Battery Pack in Stack Pressure Perspective* by Choi, H., Son, H., Choi, Y. H., Youn, B. D. and Lee, G.	Hyunhee Choi

Multi-scale topology optimization - III

Day:	Monday - June 14, 2021
Time:	6:00 PM - 6:50 PM MDT
Room:	C
Chair and co-Chair:	Bin Niu and Mingdong Zhou

ID	Title	Presenter
296	*Smooth Material Representation for the Multi-scale Topology Optimization Method by Deep Semantic Feature Learning* by Seo, M. and Min, S.	Minsik Seo
342	*Multi-scale Topology Design of Porous Heterogeneous Material-structure* by Chen, W., Su, X. and Liu, S.	Xiaonan Su
369	*Concurrent topology optimization for cellular high conductive heat sink with high stiffness* by Ali, M. A. and Shimoda, M.	Musaddiq Al Ali
563	*Multiscale Topology Optimization via Multiscale Optimization Problems and Neural Network Surrogate Models* by Najmon, J. C., Valladares, H. and Tovar, A.	Joel Najmon

Design optimization considering fracture, damage and fatigue - II

Day: Monday - June 14, 2021

Time: 7:00 PM - 7:50 PM MDT

Room: A

Chair and co-Chair: Junji Kato and Andres Tovar

ID	Title	Presenter
291	*A path-dependent level set periodic topology optimization with fracture criterion* by Thomas, S., Wu, C., Steven, G. and Li, Q.	Simon Thomas
356	*Damage identification from noisy frequency responses using topology optimization and lasso regularization* by Saito, A., Sugai, R. and Saomoto, H.	Akira Saito
429	*Topology optimization for controlling crack propagation angle* by Sun, Y., Yao, S., Xiong, Y. and Hu, J.	Yupeng Sun
431	*Data-driven and Topological Design of Structural Metamaterials for Fracture Resistance* by Da, D., Wang, L., Chan, Y. and Chen, W.	Daicong Da
484	*Fundamental study of topology optimization for brittle-ductile composites* by Hoshiba, H. and Kato, J.	Hiroya Hoshiba

Inverse problems and parameter identification - II

Day:	Monday - June 14, 2021
Time:	7:00 PM - 7:50 PM MDT
Room:	B
Chair and co-Chair:	Ikjin Lee and Jaeyub Hyun

ID	Title	Presenter
149	*Inverse Design of Spatial Phase Modulation for Programmable Localization in Plasmonic Metasurface* by Lee, D., Jiang, S., Balogun, O. and Chen, W.	Doksoo Lee
324	*Constraint Autoencoder Dimension Reduction Method for Inverse Problem* by Hou, Z., Duan, S., Han, X. and Liu, G.	Zhiping Hou
361	*Uncertainty Inverse Method for Parameters Identification of Robot Arms Based on Two-way Neural Network* by lutong, S., Shuyong, D., Li, W., Xu, H. and Guirong, L.	Lutong Shi
426	*A Model Updating Framework for Digital Twin with An Insufficient Prior Knowledge* by Kim, W. and Youn, B. D.	Wongon Kim
444	*Comparison of statistical validation metrics for accurate validation with hypothesis testing* by Son, H., Choi, H., Lee, G. and Youn, B. D.	Hyejeong Son

Robust design and reliability-based design optimization - III

Day:	Monday - June 14, 2021
Time:	7:00 PM - 7:50 PM MDT
Room:	C
Chair and co-Chair:	Weifei Hu and Chao Hu

ID	Title	Presenter
25	*Robust optimization of structures under unilateral contacts with uncertain initial gaps* by Kanno, Y.	Yoshihiro Kanno
53	*Direct probability integral method for uncertainty quantification and design optimization of structures* by Yang, D. and Chen, G.	Dixiong Yang
111	*An Efficient Gradient-Based Method for Reliability-Based Design Optimization Combined with Probability Density Evolution Method* by Weng, L., Yang, J. and Chen, J.	Lili Weng
290	*Sequentially Approximated Feasibility Robustness with Scenario Generation and Optimization* by Kania, R. and Azarm, S.	Randall Kania
535	*Robust design optimization using interpretable self-organizing map* by Nagar, D., Pannerselvam, K. and Ramu, P.	Deepak Nagar

Design optimization for optics and electromagnetics applications - III

Day:	Monday - June 14, 2021
Time:	7:00 PM - 7:50 PM MDT
Room:	D
Chair and co-Chair:	Yongbo Deng and Tae Hee Lee

ID	Title	Presenter
137	*A magneto-structural topology optimization method with additive manufacturing constraints* by Bai, Y. and Wang, Z.	Yingchun Bai
316	*Topology Optimization for Operating Efficiency of PM Machines under Driving Cycle* by Song, W. S., Ahn, S. and Min, S.	Won Seok Song
383	*Topology optimization of supercapacitors.* by Troya, M. S. d., Beck, V. and Worsley, M.	Miguel Salazar de Troya
424	*A topology optimisation in large-scale multi-particle systems based on the scattering matrix method* by Matsushima, K., Isakari, H., Takahashi, T. and Matsumoto, T.	Kei Matsushima

Robust design and reliability-based design optimization - IV

Day:	Monday - June 14, 2021
Time:	8:00 PM - 8:50 PM MDT
Room:	A
Chair and co-Chair:	Yoshihiro Kanno and Dixiong Yang

ID	Title	Presenter
26	*An aerodynamic metamodeling and optimization method using point cloud deep neural network* by Li, C., Zhang, L., Ren, C. and Xiong, F.	Li Chao
146	*An Efficient Approach for Dynamic-Reliability-Based Design Optimization Using the Probability Density Evolution Method* by Yang, J., Chen, J. and Jensen, H.	Jiashu Yang
154	*Active learning Kriging strategy for reliability-based and robust design optimization* by Meng, Z., Wang, X. and Ren, S.	Zeng Meng
486	*L-moments driven Bayesian inference for risk analysis with scarce samples in the presence of extremes* by Jayaraman, D. and Ramu, P.	Deepan Jayaraman
560	*Stochastic Crashworthiness Optimization Accounting for Simulation Noise and Random Parameters* by Ahmadisoleymani, S. S. and Missoum, S.	Seyed Saeed Ahmadisoleymani
565	*Topology Optimization of Lattice-like Materials and Structures Considering Uncertainty* by Nejat, S. A., Guest, J. K., Tootkaboni, M. and Asadpoure, A.	Seyed Ardalan Nejat

Design optimization for optics and electromagnetics applications - IV

Day:	Monday - June 14, 2021
Time:	8:00 PM - 8:50 PM MDT
Room:	B
Chair and co-Chair:	Gil Ho Yoon and Boyan Lazarov

ID	Title	Presenter
349	*Multi-fidelity model based size optimization of electromagnetic machine* by Ahn, S. and Min, S.	Sungho Ahn
438	*Electromagnetic-acoustic biphysical invisibility cloak via CMA-ES based topology optimization* by Fujii, G.	Garuda Fujii

Multi-scale topology optimization - IV

Day:	Monday - June 14, 2021
Time:	8:00 PM - 8:50 PM MDT
Room:	C
Chair and co-Chair:	Gengdong Cheng and Yuqing Zhou

ID	Title	Presenter
436	*Graded Porous Structures Design via a Multi-material and Multi-porosity Topology Optimization Approach* by Zhao, Z. and Zhang, X. S.	Zhi Zhao
475	*Multi-scale topology optimization applying FFT-based homogenization approach* by Matsui, M., Hoshiba, H., Nishiguchi, K., Kato, J. and Ogura, H.	Masayoshi Matsui
485	*Multiscale topology optimization of anisotropic composite structures for compliant mechanism design* by Lee, J.	Jaewook Lee
493	*Two-scale optimization and de-homogenization of spatially graded lattice structures* by Xu, L.	Liang Xu
512	*Band Gap Design of Lattice Infilled Structures using Topology Optimization and Experimental Material Interpolation Model* by Liang, X. and Du, J.	Jianbin Du

Socializing - 3

Day: Monday - June 14, 2021

Time: 9:00 PM - 10:00 PM MDT

Room: Lounge

Event	Organizer
The Altair Conference Talk Show II - Guests: Gengdong Cheng, Yoon Young Kim, Daniel Tortorelli (Coffee Break Room)	Kurt Maute

Tuesday - June 15, 2021

Morning Sessions – 7:00 - 11:00 AM MDT

Design of compliant mechanisms

Day: Tuesday - June 15, 2021

Time: 7:00 AM - 7:50 AM MDT

Room: A

Chair and co-Chair: Ole Sigmund and Takayuki Yamada

ID	Title	Presenter
235	*Topology optimization of flexures: a simple and versatile formulation* by Koppen, S., Langelaar, M. and Keulen, F. v.	Stijn Koppen
246	*Design of flexoelectric structures via explicit topology optimization* by Yan, X., Zhang, W. and Guo, X.	Xiaoye Yan
385	*Topology optimization designs of Multi-Input-Multi-Output hinge-free compliant mechanisms under buckling constraints* by Jianhua, R. and Wei, G.	Jianhua Rong
427	*Topology Optimization for Multi-layered Morphing Wing Structure Using Distance Function* by Tanaka, H., Yamada, M., Kogiso, N. and Yamada, T.	Hiroaki Tanaka

Reduced-order models in design optimization

Day:	Tuesday - June 15, 2021
Time:	7:00 AM - 7:50 AM MDT
Room:	B
Chair and co-Chair:	Youngsoo Choi and Mattias Schevenels

ID	Title	Presenter
102	*Multi-Fidelity Reduced-Order Modeling Applied to Structural Simulations* by Perron, C., Sarojini, D., Rajaram, D., Corman, J. and Mavris, D.	Darshan Sarojini
148	*Accelerating design optimization using reduced order models* by Choi, Y.	Youngsoo Choi
379	*Spurious modes elimination in ROM-based topology optimization of geometrically nonlinear structures* by Zhang, L. and van Keulen, F.	Lidan Zhang
384	*Acceleration of shape optimization analysis using model order reduction by Karhunen-Loeve expansion* by Shimomoto, T. and Azegami, H.	Shuichi Tango
578	*Automatic reduced order model generation of multiphisics problems using the hypercomplex finite element method.* by Aristizabal, M. and Garcia, M.	Manuel Garcia

Design optimization with applications to aerospace problems - I

Day:	Tuesday - June 15, 2021
Time:	7:00 AM - 7:50 AM MDT
Room:	C
Chair and co-Chair:	Hai Huang and Renato Picelli

ID	Title	Presenter
180	*All-At-Once MDO formulation for coupled optimization of launch vehicle design and its trajectory using a pseudo spectral method* by Valderrama, J., Brevault, L., Balesdent, M. and Urbano, A.	Jorge Valderrama
211	*Multifidelity Learning for the Design of Re-Entry Capsules* by Di Fiore, F., Maggiore, P. and Mainini, L.	Francesco Di Fiore
344	*Multidisciplinary design optimization for compressor blisk under fatigue-creep reliability constraints* by Zhang, H. and Zhang, X.	Hongxin Zhang

Machine learning for design optimization - I

Day:	Tuesday - June 15, 2021
Time:	7:00 AM - 7:50 AM MDT
Room:	D
Chair and co-Chair:	Makoto Ohsaki and Chao Hu

ID	Title	Presenter
10	*Machine learning based optimization of remodeling parameters for predicting bone formation in synthetic scaffolds* by Wu, C.	Chi Wu
72	*Cross-section optimization of steel frames using graph-based reinforcement learning* by Hayashi, K. and Ohsaki, M.	Kazuki Hayashi
136	*A Local Approach of Deep Learning for Accelerated Topology Optimizations with Broad Applicability* by Hartrumpf, N., Fiebig, S. and Franke, T.	Niklas Hartrumpf
327	*Automotive crashworthiness optimisation using machine learning to emulate engineering expertise* by Frenzel, M., Ollar, J., Büttner, C., Finotto, V. C. and FlieSSer, M.	Moritz Frenzel
374	*Machine Learning Derived Graded Lattice Structures* by Wang, J. and Panesar, A.	Jier Wang

Design optimization for advanced manufacturing - I

Day:	Tuesday - June 15, 2021
Time:	7:00 AM - 7:50 AM MDT
Room:	E
Chair and co-Chair:	Matthijs Langelaar and Hesaneh Kazemi

ID	Title	Presenter
44	*Space-time topology optimization using thermal regularization for the fabrication sequence* by Wang, W., Keulen, F. v. and Wu, J.	Weiming Wang
82	*Optimal Toolpath Design of Additive Manufactured Composite Cylindrical Structures* by Fernandez, F., Lewicki, J. P. and Tortorelli, D. A.	Luis Felipe Fernandez Ayala
116	*Imposing nozzle size restrictions in topology optimization for additive manufacturing* by Fernandez, E., Ayas, C., Langelaar, M. and Duysinx, P.	Eduardo Fernandez
123	*Topology optimization in metal additive manufacturing using an inherent strain based simulation* by Bihr, M., Allaire, G., Bogosel, B., Betbeder-Lauque, X. and Bordeu, F.	Martin Bihr
456	*Minimizing intersecting features through topology optimization for Direct Metal Deposition* by Mishra, V., Ayas, C., Langelaar, M. and Keulen, F. v.	Vibhas Mishra
464	*Topology Optimization with Generalized Geometric Projection: extension to Additive Layer Manufacturing self-supported designs* by Capasso, G., Coniglio, S., Bhat, K. V., Gogu, C. and Morlier, J.	Gabriele Capasso

Raphael "Rafi" T. Haftka Memorial Session - I

Day: Tuesday - June 15, 2021

Time: 8:00 AM - 8:50 AM MDT

Room: A

Chair: Nam-Ho Kim

ID	Title	Presenter
135	*Inverse Method for Static Load Reconstruction with Sensitivity Filtering and Optimal Sensor Placement* by Hanekom, M.	Mari Hanekom
430	*Flight Control Surface Optimization with Optimal Rib Placement* by Gantovnik, V. and Kataoka, M.	Vladimir Gantovnik
476	*Simultaneous size, layout and topology optimization of stiffened panels under stress and buckling constraints* by Chu, S., Featherston, C. and Kim, H. A.	Sheng Chu
569	*Composite Optimization - From Ply-Tailoring Concept to Stacking Sequence Details* by Zhou, M. and Fleury, R.	Ming Zhou

Design optimization with applications to aerospace problems - II

Day:	Tuesday - June 15, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	B
Chair and co-Chair:	Peter Dunning and Axel Schumacher

ID	Title	Presenter
87	*Uncertainty quantification for multidisciplinary launch vehicle design using model order reduction and spectral methods* by Brevault, L. and Balesdent, M.	Loic Brevault
100	*An efficient hybrid method for aeroelastic optimization of 3D-curved surfaces laminates* by Souza, C. E. d. and Leon, D. M. D.	Daniel Milbrath De Leon
177	*Coupled topology and shape optimization of wings* by Høghøj, L. C., Conlan-Smith, C., Träff, E. A., Sigmund, O., Aage, N. and Andreasen, C. S.	Lukas Christian Høghøj
308	*On the numerical accuracy of low- and high-order panel methods in shape optimization* by Conlan-Smith, C., Sigmund, O. and Andreasen, C. S.	Cian Conlan-Smith
309	*Thermal Simulation and Optimization of an Electro-Hydrostatic Actuator to reduce Component Temperatures* by Knecht, S. and Albers, A.	Simon Knecht

Topology optimization for fluids - I

Day:	Tuesday - June 15, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	C
Chair and co-Chair:	Joe Alexandersen and Georg Pingen

ID	Title	Presenter
43	*Design of structure subject to non-Newtonian fluid-structure interaction loads using topology optimization of binary structure* by Ranjbarzadeh, S., Picelli, R. and Silva, E. C. N.	Shahin Ranjbarzadeh
250	*Level set topology optimization for Fluid-Structure Interactions* by Neofytou, A., Yu, F., Zhang, L. T. and Kim, H. A.	Andreas Neofytou
332	*3D Topology Optimization of Spacers in a Reverse Osmosis Channel* by Sun, S. and Qian, X.	Sicheng Sun
355	*Multi-shape optimization in two-dimensional Stokes flow* by Suchan, T. and Welker, K.	Tim Suchan
402	*Improved flow and pressure field accuracy in topology optimization through volume averaging* by Langelaar, M. and van Keulen, F.	Maarten Theulings

Machine learning for design optimization - II

Day:	Tuesday - June 15, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	D
Chair and co-Chair:	Glaucio Paulino and Hongyi Xu

ID	Title	Presenter
142	*AI assisted optimization of highly non-linear systems on hand of vehicle frontal crash study* by Trilling, J., Schumacher, A. and Zhou, M.	Jens Trilling
223	*Generating high-resolution optimal topology using autoencoder* by Lee, S., Kim, H. and Min, S.	Seungjun Lee
357	*De-homogenization using Convolutional Neural Networks* by Elingaard, M. O., Bærentzen, J. A., Aage, N. and Sigmund, O.	Ole Sigmund
377	*Multiclass Blending and Data-Driven Topology Optimization for Functionally Graded Structures* by Chan, Y., Wang, L., Da, D. and Chen, W.	Yu-Chin Chan

Design optimization for advanced manufacturing - II

Day:	Tuesday - June 15, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	E
Chair and co-Chair:	Eddie Wadbro and Josephine Carstensen

ID	Title	Presenter
122	*Topology and print orientation optimization for additively manufactured products subjected to fatigue constraints* by Hermansen, S. M., Olesen, A. M. and Lund, E.	Erik Lund
124	*Topology Optimization of supports with imperfect bonding in Additive Manufacturing* by Godoy, M., Bogosel, B. and Allaire, G.	Matías Godoy
179	*Optimization of support structures for reducing thermal displacements in SLA* by Mommeyer, C., Ruelens, W., Craeghs, T., Lombaert, G. and Schevenels, M.	Christiaan Mommeyer
365	*Experimental Investigation of Topology-Optimized Beams with Anisotropic Base Materials* by Kim, H. and Carstensen, J.	Hajin Kim
549	*Drainage filter for topology optimization of cleanable parts* by Giele, R., Langelaar, M. and Keulen, F. v.	Reinier Giele

Raphael "Rafi" T. Haftka Memorial Session - II

Day: Tuesday - June 15, 2021

Time: 9:00 AM - 9:50 AM MDT

Room: A

Chair: Nam-Ho Kim

ID	Title	Presenter
539	*Generalized Multifidelity Active Learning Framework for Gaussian-Process-Based Reliability Analysis* by Chaudhuri, A. and Willcox, K. E.	Anirban Chaudhuri
580	*The complex-step derivative approximation20 years later* by Martins, J. R. R. A., Anibal, J. and Yildirim, A.	Joaquim Martins

Evolutionary and zero-order methods for structural optimization - I

Day:	Tuesday - June 15, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	B
Chair and co-Chair:	Andres Tovar and Chih-Hsing Liu

ID	Title	Presenter
32	*Stiffener layout optimization for three-dimensional box structures with maximization of natural frequencies* by Hu, T., Ding, X., Zhang, H. and Shen, L.	Tiannan Hu
103	*Motion characteristics of biological propulsion systems for underwater vehicles in starting process* by Shang, X., Wang, Y. and Yang, S.	Xiaowen Shang
258	*Maximum thickness control in heuristic based structural optimization* by Mars, W., Vietor, T., Fiebig, S. and Franke, T.	Wael Mars
304	*A new method for faster identification of segmented feasible regions in constraint optimization problems* by Komeilizadeh, K. and Duddeck, F.	Koushyar Komeilizadeh
407	*A FORTRAN formulation for efficient topology optimization of structures in ANSYS* by Reales, G., van Keulen, F., Goosen, J. and Bornheim, A.	Guillermo Reales Gutiérrez
421	*Bionic design and optimization of aircraft spoiler stiffened layout* by Shenyan, C., Ruotong, J., Tianyin, Z. and Siyuan, D.	Ruotong Jiao

Moving morphable component methods - I

Day:	Tuesday - June 15, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	C
Chair and co-Chair:	Weisheng Zhang and Peter Dunning

ID	Title	Presenter
131	*Explicit topology optimization considering transient structural dynamic responses using the moving morphable component (MMC) approach* by Li, J., Zhang, Y., Zhang, W. and Guo, X.	Jialin Li
221	*Combined model-based stiffened plate structure topology optimization via MMC approach* by Linyuan, L.	Linyuan Li
367	*Explicit Topology Optimization of Topological Insulators* by Luo, J., Du, Z. and Guo, X.	Jiachen Luo
392	*Implementing Bezier Curves and Commercial Solvers in the Moving Morphable Components Framework* by Shannon, T., Robinson, T., Murphy, A. and Armstrong, C.	Thomas Shannon
490	*Moving Stretchable Bars (MSB) method with chain constraints for topology optimization of deployable structures* by Jia, D., Bontoft, E., Zhang, Y., Zhu, J., Zhang, W. and Toropov, V.	Dongsheng Jia
566	*Additive Manufacturing-Oriented Graded Lattice Structure Design Based on MMC Method and Partition Coordinate Perturbation Technology* by Guo, X., Liu, C. and Xu, W.	Xu Guo

Design optimization with applications to aerospace problems - III

Day:	Tuesday - June 15, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	D
Chair and co-Chair:	Graeme Kennedy and Vassili Toropov

ID	Title	Presenter
55	*Efficient Fail-safe Topology Optimization using the Geometry Projection Method* by Smith, H., Norato, J., Deaton, J. and Kolonay, R.	Hollis Smith
162	*Topology optimization of compliant mechanisms for designing reliable Lunar surface hardware.* by Budzyń, D., Cammarano, A. and Cowley, A.	Dorota Budzyń
326	*Efficient Aircraft Rib Design through Multi-scale Topology Optimisation* by Duriez, E., Morlier, J., Charlotte, M. and Azzaro-Pantel, C.	Edouard Duriez
358	*Topology optimization of large-scale 3D morphing wing structures* by Jensen, P. D. L., Wang, F., Dimino, I. and Sigmund, O.	Peter Dørffler Ladegaard Jensen
543	*The topology-size integrated optimization design for an aircraft wing structure* by Huang, H. and Fu, J.	Hai Huang

Design optimization for advanced manufacturing - III

Day:	Tuesday - June 15, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	E
Chair and co-Chair:	Lise Noel and James Guest

ID	Title	Presenter
163	*Dripping Effect and Overhang Constraint in Topology Optimization for Additive Manufacturing* by Ansola, R., Borinaga, R. and Veguería, E.	Alain Garaigordobil
265	*Concurrent shape optimization of the part and scanning-path for additive manufacturing* by Boissier, M.	Mathilde Boissier
303	*Topology optimization in OpenFOAM: how to define the maximum inverse porosity to consider manufacturing constraint* by Alarcón Soto, P. I. and Duysinx, P.	Pablo Ignacio Alarcón Soto
459	*Development of a coupled topology optimization method for injection-molded short fiber-reinforced polymer-metal hybrid composites* by Enguerel, B. and Albers, A.	Berenalp Enguerel
531	*Topology Optimization under Constant Feature Thickness Constraint for Wire Based Additive Manufacturing* by Carroll, J. D. and Guest, J. K.	Julia Carroll

Socializing - 4

Day: Tuesday - June 15, 2021

Time: 10:00 AM - 11:00 AM MDT

Room: Lounge

Event	Organizer
In Memoriam of Raphael "Rafi" T. Haftka (Coffee Break Room)	Nam-Ho Kim

Tuesday - June 15, 2021

Evening Sessions – 6:00 - 10:00 PM MDT

Plenary - 2

Day: Tuesday - June 15, 2021

Time: 6:00 PM - 6:50 PM MDT

Room: Auditorium

Chair: Alicia Kim

Title	Presenter
Autonomous Optimization and Control of Energy Systems	Andrey Bernstein

Evolutionary and zero-order methods for structural optimization - II

Day:	Tuesday - June 15, 2021
Time:	7:00 PM - 7:50 PM MDT
Room:	A
Chair and co-Chair:	Xiaodong Huang and Amir H Gandomi

ID	Title	Presenter
129	*History of Evolutionary Structural Optimization (ESO) and Bidirectional ESO* by Steven, G.	Grant Steven
229	*Topology Optimization of Cellular Structures with HCA* by Jia, J., Yin, S., Xu, J., Da, D. and Hu, J.	Jiao Jia
295	*Auto Plot PATHFINDER : Can multi-purpose optimization generate a plant layout comparable to a veteran engineer ?* by Mori, K., Yamada, Y., Sakiyama, H., Miyashita, T., Sato, T. and Arakawa, M.	Kenji Mori
352	*Geometry Optimization of a Rubber Mount Using Cuckoo Search Algorithm Considering Hyperelasticity and Viscoelasticity* by Liu, C., Hsu, Y. and Yang, S.	Chih-Hsing Liu
483	*Exploring Quasi-Optimum Solution Assuming Side Constraints from Approximation Active Constraints* by Unesaki, H., Osumi, Y., Hiramatsu, S., Kondo, S., Hatano, T., Arakawa, M. and Butsuen, T.	Hiroshi Unesaki
568	*The hybrid cellular automaton with adaptive controllers* by Raeisi, S., Arcos-Legarda, J. and Tovar, A.	Sajjad Raeisi

Topology optimization for fluids - II

Day:	Tuesday - June 15, 2021
Time:	7:00 PM - 7:50 PM MDT
Room:	B
Chair and co-Chair:	Emilio Carlos Nelli Silva and Yongbo Deng

ID	Title	Presenter
51	*On the topology optimization of fluid-structure interaction problems with binary design variables* by Azevêdo, A. S. d. C., Ranjbarzadeh, S., Gioria, R. d. S., Silva, E. C. N. and Picelli, R.	Anderson S.C. Azevêdo
171	*Topology optimization of fluid-structure interaction problems with turbulence models* by Picelli, R., Ranjbarzadeh, S., Sivapuram, R., Gioria, R. d. S. and Silva, E. C. N.	Renato Picelli
277	*Topology optimization for Navier-Stokes flow under the projected area constraint* by Morishita, N., Nishiwaki, S., Izui, K., Furuta, K. and Kondoh, T.	Kozo Furuta
446	*Structural optimization of transient trajectory of particle* by Yoon, G. H.	Gil Ho Yoon
552	*A Hyperelasticity-Based Mesh Deformation Technique for Topology Optimization of Fluid-Structure Interaction Problems* by Abdelhamid, M. and Czekanski, A.	Mohamed Abdelhamid

Design optimization of heat exchangers and other thermo-fluid applications - III

Day: Tuesday - June 15, 2021

Time: 7:00 PM - 7:50 PM MDT

Room: C

Chair and co-Chair: Alicia Kim and Ming Zhou

ID	Title	Presenter
16	*Intelligent Design Methods for Structure Layout Optimization Based on Deep Learning* by Lin, Q. and Hong, J.	Qiyin Lin
255	*Topology Optimization for Transient Heat Transfer considering Size Effect of Microstructure in Porous Material* by Sukulthanasorn, N., Hoshiba, H., Kurumatani, M., Kato, J. and Terada, K.	Naruethep Sukulthanasorn
289	*Conformal Topology Optimization of Heat Conduction Problems on Manifolds using Dimension Reduction Level-set Methods (DR-LSM)* by Xu, X., Gu, X. D. and Chen, S.	Xiaoqiang Xu
472	*A novel design method of heat sink with conjugate heat transfer by geometry modeling and shape optimization* by Tian, X., Wang, W., Qian, S. and Sun, C.	Xiwei Tian
546	*Multi-Scale and Multi-Physics Analysis, Approximation-Assisted Optimization, and Experimental Validation of Compact Heat Exchangers utilizing High-Performance, Non-Round Tubes* by James, T. and Vikrant, A.	James Tancabel

Moving morphable component methods - II

Day:	Tuesday - June 15, 2021
Time:	8:00 PM - 8:50 PM MDT
Room:	A
Chair and co-Chair:	Nozomu Kogiso and Xu Guo

ID	Title	Presenter
35	*Fully adaptive isogeometric topology optimization using MMC based on truncated hierarchical B-splines* by Yang, A., Wang, S. and Xie, X.	Aodi Yang
224	*Explicit topology optimization via growth evolution of moving morphable component (MMC)* by Cui, T.	Tianchen Cui
243	*Explicit structural topology optimization using BEM-based MMV approach* by Zhang, W., Youn, S. and Guo, X.	Weisheng Zhang
275	*Topology Optimization with B-Spline Offset Features* by Zhou, Y. and Zhang, W.	Ying Zhou
310	*Topology Optimization of Armor Layer in Marine Flexible Riser Based on Moving Morphable Components* by Wang, L., Yang, Z., Yan, J., Shi, D., Mao, Y. and Fan, Z.	Lifu Wang

Topology optimization for fluids - III

Day:	Tuesday - June 15, 2021
Time:	8:00 PM - 8:50 PM MDT
Room:	B
Chair and co-Chair:	Gil Ho Yoon and Renato Picelli

ID	Title	Presenter
183	*Topology optimization of stationary fluid-structure interaction problems including large displacements* by Silva, K. E. S., Sivapuram, R., Ranjbarzadeh, S., Gioria, R., Silva, E. C. N. and Sanches, R. P.	Kamilla Silva
188	*Topology optimization of turbulent fluid flow by using integer linear programming* by Picelli, R., Souza, E. M. d., Ranjbarzadeh, S., Gioria, R. d. S. and Silva, E. C. N.	Emilio Carlos Nelli Silva
362	*Topology optimization for surface flows* by Deng, Y., Zhang, W., Liu, Z., Zhu, J., Bai, J. and Korvink, J. G.	Yongbo Deng
387	*Data-driven Multifidelity Topology Design Using Variational Autoencoder in Thermal-fluid Problems* by Yaji, K., Yamasaki, S. and Fujita, K.	Kentaro Yaji
393	*Navier-Slip Boundary Effect on Flow Topology Optimization* by Pingen, G., Maute, K. and Negrete, L.	Georg Pingen

Design optimization of heat exchangers and other thermo-fluid applications - IV

Day:	Tuesday - June 15, 2021
Time:	8:00 PM - 8:50 PM MDT
Room:	C
Chair and co-Chair:	Boyan Lazarov and Ahmad Najafi

ID	Title	Presenter
364	*Topology Optimization of Fischer Tropsch Reactors for Synthetic Fuel Production* by Barrera Cruz, J. L., Hartvingsen, J. J. and Beck, V. A.	Jorge Luis Barrera Cruz
391	*Level-Set Topology Optimization of a Phase Change Cooled Airfoil Leading Edge for High Speed Applications* by Wunsch, N. and Maute, K.	Nils Wunsch
440	*Multi-objective design optimization of perforated plate to improve the flow distribution in the heat exchanger* by Miyamoto, K., Kitayama, S., Izutsu, R., Tabuchi, S. and Yamada, S.	Kohei Miyamoto
506	*Topology Optimization Design of Guide Plates for Cold Plate Flow Channel* by Qian, S. and Wang, W.	Sihao Qian

Socializing - 5

Day: Tuesday - June 15, 2021

Time: 9:00 PM - 10:00 PM MDT

Room: Lounge

Event	Organizer
Young Investigator Workshop I (Coffee Break Room)	John Evans

Wednesday - June 16, 2021

Morning Sessions – 7:00 - 11:00 AM MDT

ISSMO General Assembly

Day: Wednesday - June 16, 2021

Time: 7:00 AM - 7:50 AM MDT

Room: Auditorium

Chair: Wei Chen

Orgnanized by Professor Wei Chen, President, ISSMO

Isogeometric methods in design optimization

Day:	Wednesday - June 16, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	A
Chair and co-Chair:	John Evans and Peter Dunning

ID	Title	Presenter
34	*Adaptive isogeometric topology optimization in truncated hierarchical B-splines space* by Xie, X., Wang, S. and Yang, A.	Xianda Xie
203	*Multiresolution Isogeometric Shape and Topology Optimization with Volumetric Subdivision Representation of Complex Geometry* by Xu, G.	Gang Xu
380	*Topology Optimization using Hierarchically Refined Higher Order B-Spline Meshes* by Schmidt, M., Noel, L., Doble, K., Evans, J. and Maute, K.	Mathias Schmidt
515	*Isogeometric shape design sensitivity analysis of hyperelastic Cosserat rods with extensible directors in frictionless contact problems* by Choi, M., Sauer, R. A. and Klinkel, S.	Myung-Jin Choi
524	*Isogeometric design and shape optimization of 3D beams and lattice structures at large deformations* by Weeger, O.	Oliver Weeger

Optimization of contact and interface problems

Day:	Wednesday - June 16, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	B
Chair and co-Chair:	Mathias Wallin and Niclas Strömberg

ID	Title	Presenter
15	*Optimization design for uniform contact stress distribution in elastic contact problems* by Zhou, Y., Lin, Q., Hong, J. and Yang, N.	Yicong Zhou
181	*Internal contact modeling for topology optimization* by Bluhm, G. L., Sigmund, O. and Poulios, K.	Gore Lukas Bluhm
270	*Nonlinear Shape Optimization of Machine Elements in Contact* by Sjövall, F., Wallin, M., Tortorelli, D. A. and White, D. A.	Filip Sjövall
410	*Many-component analysis and design optimization with contact interface conditions* by Doble, K., Schmidt, M., Noel, L. and Maute, K.	Keenan Doble
411	*Phase Field Topology Optimization of Elasto-Plastic Structures in Contact* by Myśliński, A.	Andrzej Myśliński
445	*Topology optimization of elastic contact problems with maximum contact pressure constraint* by Li, J., Zhang, W. and Gao, T.	Jiajia Li

Design optimization accounting for material nonlinear behavior - I

Day:	Wednesday - June 16, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	C
Chair and co-Chair:	Julian Norato and Daniel Tortorelli

ID	Title	Presenter
127	*Conceptual Crashworthiness Sheet Sizing* by Pedersen, C. B., Kulathu, S., Mulmule, S., Upadhyay, P. and Bose, K.	Claus B.W. Pedersen
192	*Topology optimization of thermo-hyperelastic structures utilizing inverse motion based form finding* by Sui, Q., Yan, J., Fan, Z., Wallin, M., Ristinmaa, M. and Niu, B.	Qianqian Sui
276	*Structural topology optimization for ductile failure and buckling resistance* by Russ, J.	Jonathan Russ
297	*A Modular XFEM Approach Used For Elastoplastic Materials* by Wohlgemuth, F.	Felix Wohlgemuth

Design optimization for civil enginering and architectural design - I

Day:	Wednesday - June 16, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	D
Chair and co-Chair:	Josephine Carstensen and Makoto Yamakawa

ID	Title	Presenter
96	*Plate supports optimization using feature mapping approach* by Zelickman, Y. and Amir, O.	Yakov Zelickman
121	*The efforts so far: Topology optimization in concrete construction* by Stoiber, N. and Kromoser, B.	Nadine Stoiber
134	*A heuristic two-stage optimization of the system building gymnasiums according to the scale* by Takahashi, H., Yamakawa, M., Iguchi, T., Tanahashi, T. and Nagasaka, K.	Hayata Takahashi
156	*Robust Design Optimization of Moment-Resisting Steel Frames using Displacement-Restraint Brace and Oil Damper* by Kishida, S., Yamakawa, M., Asakawa, T. and Nagano, Y.	Sumio Kishida
312	*Topology optimization of a steel joint for temporary space frames using P-norm aggregated stress constraints* by Van Cauteren, D., Lombaert, G. and Schevenels, M.	Daan Van Cauteren

Design of composite structures - I

Day:	Wednesday - June 16, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	E
Chair and co-Chair:	Grégoire Allaire and Sa-aadat Parker

ID	Title	Presenter
54	*Simultaneous optimization of stiffener placement and skin material properties on a stiffened composite space launcher skirt* by Savine, F., Irisarri, F., Julien, C., Vincenti, A. and Guerin, Y.	Florent Savine
99	*Challenges for dealing with composite winding profiles under lateral crash loads using the Graph and Heuristic based Topology Optimization* by Schneider, D., Schumacher, A., Huf, A., Donhauser, T. and Schmeer, S.	Dominik Schneider
213	*A generalised isogeometric polar approach for optimising variable stiffness composites: application to eigenvalue buckling problems* by Fiordilino, G. A., Izzi, M. I. and Montemurro, M.	Marco Montemurro
353	*Topological Optimisation of Large Additively Manufactured Composite Structures with a Graded Lattice Core* by Moss, A., Panesar, A., Macquart, T., Greaves, P., Forrest, M. and Pirrera, A.	Alex Moss
532	*Topology optimization with anisotropic material properties considering buckling* by Ferrari, F. and Guest, J. K.	Federico Ferrari

Topology optimization for solid mechanics

Day:	Wednesday - June 16, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	A
Chair and co-Chair:	Robert Dienemann and Gore Lukas Bluhm

ID	Title	Presenter
126	*Coupled topology optimization of both structure and bolt connections* by Rakotondrainibe, L., Allaire, G. and Orval, P.	Lalaina Rakotondrainibe
314	*Topology optimization for stiffness and stability with nonlinear geometry* by Dunning, P.	Peter Dunning
331	*Topology optimization for pressure loading problems under buckling constraints using the TOBS method* by Mendes, E., Sivapuram, R., Rodríguez, R., Sampaio, M. and Picelli, R.	Eduardo Mendes
334	*Towards intentional aesthetics in topology optimization by applying the principle of unity-in-variety* by Loos, S., Wolk, S. V. D., Graaf, N. d. and Wu, J.	Shannon Loos
336	*Analytical relationships for defining minimum length scales in the robust topology optimization framework based on uniform manufacturing uncertainties.* by Denis, T., Pierre, D. and Eduardo, F.	Denis Trillet
496	*Topology optimization with wall thickness and developability constraints for foldable, shape-changing structures* by Zhou, Y., Nomura, T., Dede, E. M. and Saitou, K.	Yuqing Zhou

Design optimization accounting for material nonlinear behavior - II

Day:	Wednesday - June 16, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	B
Chair and co-Chair:	Claus B.W. Pedersen and Myung-Jin Choi

ID	Title	Presenter
20	*Plastic Work Constrained Topology Optimization* by Wallin, M., Ivarsson, N., Amir, O. and Tortorelli, D. A.	Mathias Wallin
285	*Conformal Topology Optimization of Multi-material Ferromagnetic Soft Actuators* by Tian, J. and Chen, S.	Jiawei Tian
299	*Sensitivity analysis for elasto-plastic materials with a non-local damage regularisation* by Guhr, F. and Barthold, F.	Fabian Guhr
317	*Gradient based shape optimization of the X0-specimen* by Liedmann, J., Gerke, S., Barthold, F. and Brünig, M.	Jan Liedmann
319	*An Interface-enriched Level Set-based Topology Optimization for Tailoring Fracture Toughness* by Zhang, J., Keulen, F. v. and Aragón, A. M.	Jian Zhang

Design optimization for civil enginering and architectural design - II

Day:	Wednesday - June 16, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	C
Chair and co-Chair:	Oded Amir and Josephine Carstensen

ID	Title	Presenter
24	*Topology optimization of nonlinear viscous dampers for energy-dissipating structures subjected to random seismic excitations* by Su, C. and Xian, J.	Cheng Su
311	*Complex structural optimization method involving cross-sectional size and material elastic modulus variables with the approximate concepts* by Jiayi, F. and Hai, H.	Jiayi Fu
346	*Structural Optimisation of Diffusion Driven Degradation Processes* by Waschinsky, N., Barthold, F. and Menzel, A.	Navina Waschinsky
401	*Circular Arch Optimization by Numerical and Dimensionless Approaches* by Manuello, A. and Marano, G. C.	Amedeo Manuello
544	*Application of structural design and topology optimization in architecture* by Chun, J.	Junho Chun

Design of composite structures - II

Day:	Wednesday - June 16, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	D
Chair and co-Chair:	Axel Schumacher and Federico Ferrari

ID	Title	Presenter
236	*Coupled optimization of topology and orientation of locally anisotropic materials* by Touiti, A., Allaire, G. and Jouve, F.	Abdelhak Touiti
305	*Failure load maximisation of variable-stiffness composites with mass and manufacturability constraints* by Izzi, M. I., Catapano, A. and Montemurro, M.	Michele Iacopo Izzi
378	*Optimization of fiber-reinforced bead patterns using an evolutionary algorithm* by Ott, M., Volk, W. and Albers, A.	Patrick Haberkern
470	*The Tsai-Wu failure index as an objective in composite structural optimization* by Parker, S. and Groenwold, A.	Sa-aadat Parker
529	*Optimal design of VTOL -UAV using PLA reinforced with carbone fibres* by Bassir, D., Yue, H., Abouzaid, K. and Majak, J.	Hao Yue

Novel topology optimization techniques - I

Day:	Wednesday - June 16, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	E
Chair and co-Chair:	Pierre Duysinx and Christian Frier Hvejsel

ID	Title	Presenter
98	*A new approach to topological ligaments in structural optimization* by Dapogny, C.	Charles Dapogny
113	*A diversity metric based on Gaussian process model for diverse and competitive design* by Li, Z.	Zheng Li
144	*A new approach based on spectral graph theory to avoiding enclosed voids in topology optimization* by Aranda, E. and Ruiz, D.	Alberto Donoso
170	*Influence of different modeling for outer contour and inner zones in topology optimization* by Albers, A.	Jan Holoch

Socializing - 6

Day: Wednesday - June 16, 2021

Time: 10:00 AM - 11:00 AM MDT

Room: Lounge

Event	Organizer
Young Investigator Workshop II (Coffee Break Room)	John Evans

Wednesday - June 16, 2021

Evening Sessions – 6:00 - 10:00 PM MDT

Design of composite structures - III

Day:	Wednesday - June 16, 2021
Time:	6:00 PM - 6:50 PM MDT
Room:	A
Chair and co-Chair:	Renato Picelli and Zunyi Duan

ID	Title	Presenter
39	*A Full-scale Topology Optimization Method for Fiber-reinforced Composite Structures with Continuous Fiber Paths* by Li, H., Li, H. and Gao, L.	Hang Li
117	*Material orientation optimization of laminated shell structure for frequency response problem* by Tsukihara, R. and Shimoda, M.	Ryosuke Tsukihara
119	*Stiffness-based concurrent design of fiber composite based on the novel discrete-continuous material orientation optimization model* by Ding, H. and Xu, B.	Haoqing Ding
186	*Fiber Reinforced Additive Manufacturing: Implementation in Optimization of Structural Components* by Ray, N. and Kim, I. Y.	Noah Ray
381	*A heuristic method for practical FEA-based optimization of wind turbine blade core distributions* by Herrema, A., Rotondo, M. and Mullings, J.	Austin Herrema

Novel topology optimization techniques - II

Day:	Wednesday - June 16, 2021
Time:	6:00 PM - 6:50 PM MDT
Room:	B
Chair and co-Chair:	Jianbin Du and Jaeyub Hyun

ID	Title	Presenter
101	*A new method for integrated topology and packaging optimization* by Roper, S. W. K. and Kim, I. Y.	Stephen Roper
130	*3D Manufacturable Design using Element-based Topology Optimization* by Tran, T. and Huang, X.	Tuan Tran
139	*Introducing Design Space-Independence in Beam Cross-Section Optimization* by Sen, C. and Prasad, J.	Chander Sen
225	*The number of genus Constraint in 3D Structural Topology Optimization* by Han, H., Wang, C. and Liu, Z.	Haitao Han
553	*Revisiting element removal strategies in topology optimization and the role of Heaviside Projection in material reintroduction* by Behrou, R., Lotfi, R., Carstensen, J., Ferrari, F. and Guest, J.	James Guest

Machine learning for design optimization - III

Day:	Wednesday - June 16, 2021
Time:	6:00 PM - 6:50 PM MDT
Room:	C
Chair and co-Chair:	Wei Chen and Kazuki Hayashi

ID	Title	Presenter
71	*Acceleration design for continuum topology optimization Based on ICM method and data-driven* by Ye, H., Li, J., Wei, N. and Sui, Y.	Hongling Ye
89	*Accelerated projected gradient method for compliance minimization problem* by Kanno, Y.	Akatsuki Nishioka
420	*Towards accelerating topology optimization via machine learning* by Xing, Y. and Tong, L.	Yi Xing
474	*Iterative Sizing Optimization of Aircraft Wings Using Analytical Neural Networks* by Kobayashi, M. and Ogawa, Y.	Masakazu Kobayashi
492	*Dynamic Robotic Grasping Optimization Based On Deep Q-Network* by Fang, J., Hu, W., Wang, C., Liu, Z. and Tan, J.	Jianhao Fang

Design optimization for advanced manufacturing - IV

Day:	Wednesday - June 16, 2021
Time:	6:00 PM - 6:50 PM MDT
Room:	D
Chair and co-Chair:	Mingdong Zhou and Yoon Young Kim

ID	Title	Presenter
83	*PDE for the geometrical constraint of additive manufacturing and its application to topology optimization* by Yamada, T.	Takayuki Yamada
248	*Concurrent Optimization of Building Orientation and Infill-Struts for Lattice Structures in Additive Manufacturing* by Li, C., Zhu, J., Yuan, S. and Zhang, W.	Chenyang Li
542	*Topology Optimization for Design with Stress-dependent Material Properties* by Unger, J., Gaynor, A., Vaughn, M., McWilliams, B., Hemker, K. and Guest, J.	Justin Unger

Design of composite structures - IV

Day:	Wednesday - June 16, 2021
Time:	7:00 PM - 7:50 PM MDT
Room:	A
Chair and co-Chair:	Ming Zhou and Bin Niu

ID	Title	Presenter
19	*Optimization of fiber orientation for composite laminates based on artificial neural networks* by Xu, Y., Gao, Y., Wu, C., Fang, J., Steven, G. P. and Li, Q.	Yanan Xu
184	*A Topology Optimization approach for Design of Actively-cooled Vascular Composite* by Pejman, R., Sigmund, O. and Najafi, A. R.	Reza Pejman
341	*Design of composite structures with programmable elastic responses under finite deformations* by Li, W., Wang, F., Sigmund, O. and Zhang, X. S.	Weichen Li
382	*Multiobjective Stacking Sequence Optimization for Unsymmetrical Laminated Plate with Ply Drop-off under Several Empirical Constraints* by Kogiso, N. and Hashiwaki, K.	Nozomu Kogiso
396	*Design Of Fiber Path And Shape For Variable-stiffness Panels Via Isogeometric Analysis* by Wang, Y. and Hao, P.	Yu Wang

Novel topology optimization techniques - III

Day:	Wednesday - June 16, 2021
Time:	7:00 PM - 7:50 PM MDT
Room:	B
Chair and co-Chair:	Xiaodong Huang and Gengdong Cheng

ID	Title	Presenter
145	*An ODE-govern Density Method with Level-set Description for Topology Optimization* by Liu, Y. and Du, J.	Yang Liu
262	*Combined topology and spatial layout optimization for modularly constructed structures* by Higginson, K. and van Keulen, F.	Kristie Higginson
460	*Development of joint distance constraint for optimal topology and optimal connection for multiple components* by Kim, J. H. and Yoon, G. H.	Jun Hwan Kim
558	*Topology Optimization of Structures with Programmable Snapping Instabilities* by Zhao, T. and Paulino, G. H.	Tuo Zhao

Machine learning for design optimization - IV

Day:	Wednesday - June 16, 2021
Time:	7:00 PM - 7:50 PM MDT
Room:	C
Chair and co-Chair:	X. Shelly Zhang and Daicong Da

ID	Title	Presenter
153	*A data-driven self-adaptive SSI-PSO for the multi-scale lightweight design of the CFRP automotive parts* by Li, H., Liu, Z. and Zhu, P.	Han Li
159	*Machine learning and graph embedding for truss topology optimization* by Ohsaki, M., Hayashi, K. and Sakaguchi, K.	Makoto Ohsaki
414	*Universal Machine Learning for Topology Optimization: Multiscale Adaptive Online Learning on Unstructured Discretizations* by Zhang, Y., Senhora, F. V. D., Tang, T. L. E., Mirabella, L. and Paulino, G.	Heng Chi
443	*System reliability analysis using predictive system uncertainty* by Yang, S. and Lee, I.	Seonghyeok Yang
564	*Efficient shape update in topology optimization using physics-informed neural networks* by Hashimoto, A., Furuta, K., Izui, K. and Nishiwaki, S.	Atsuto Hashimoto

Design optimization for advanced manufacturing - V

Day:	Wednesday - June 16, 2021
Time:	7:00 PM - 7:50 PM MDT
Room:	D
Chair and co-Chair:	Daniel Milbrath De Leon and Yoshihiro Kanno

ID	Title	Presenter
81	*Optimization-based Design for Additive Manufacturing* by Robbins, J., Aguilo, M., Clark, B., Johnson, K. and Viertel, R.	Joshua Robbins
214	*Additive manufacturing topology optimization for buckling with stiffness constraint* by Kato, J., Mizutori, T., Hoshiba, H., Uozumi, H. and Kikawa, K.	Junji Kato
283	*Topology Optimization Method with Overhang Constraint for Selective Laser Melting* by Wang, Y.	Yu Wang
433	*Topology optimization subject to overhang angle constraint with overhang length relaxation in AM* by Zhang, K. and Cheng, G.	Kaiqing Zhang
562	*Discrete Object Projection using Alternate Strategies to Prevent Phase Mixing* by Luo, C., Lee, H. Y. and Guest, J. K.	Chuan Luo

Design of composite structures - V

Day:	Wednesday - June 16, 2021
Time:	8:00 PM - 8:50 PM MDT
Room:	A
Chair and co-Chair:	Ahmad Najafi and Julian Norato

ID	Title	Presenter
23	*Optimizing composite structures with curvilinear fibers through a parametric divergence-free vector field method* by Tian, Y., Pu, S., Shi, T. and Xia, Q.	Ye Tian
325	*Concurrent Multi-phase and Multi-scale Design Optimization of Fiber-reinforced Variable Stiffness Composite Structures* by Duan, Z., Zhu, J., Xu, B. and Yan, J.	Zunyi Duan
338	*Fiber-reinforced hyperelastic structures under large deformations* by Zhang, X. S., Chi, H. and Zhao, Z.	X. Shelly Zhang
422	*Comprehensive Optimization of Composite Laminate Stacking Sequence and Shape with Two-Level Approximation Method* by Chen, S., Liu, X., Yang, Z. and Huang, H.	Xinrong Liu
499	*Optimizing Reinforcement Architecture of Plain-woven Textile Composites for Tailored Stiffness and Thermal Conductivity* by Zhou, X.	Xiaoyi Zhou

Novel topology optimization techniques - IV

Day: Wednesday - June 16, 2021

Time: 8:00 PM - 8:50 PM MDT

Room: B

Chair and co-Chair: James Guest and Grant Steven

ID	Title	Presenter
222	*Adaptive mesh refinement in density-based topology optimization* by Lazarov, B.	Boyan Lazarov
274	*Generative Adversarial Networks for Multiphysics Topology Design* by Parrott, C. M. and James, K. A.	Corey Parrott
281	*Structural topology optimization using the body-fitted mesh* by Zhuang, Z., Xie, Y. M. and Zhou, S.	Zicheng Zhuang
435	*IGA/FCM-based Adaptive Bubble Method for Simultaneous Shape and Topology Optimization of Shell Structures* by Cai, S., Zhang, H. and Zhang, L.	Hualin Zhang
437	*Structural complexity control in discrete variable continuum topology optimization* by Liang, Y., Yan, X. and Cheng, G.	Yuan Liang
541	*Topology Optimization for thermal response time based on linear eigenvalues* by Hyun, J. and Kim, H. A.	Jaeyub Hyun

Machine learning for design optimization - V

Day:	Wednesday - June 16, 2021
Time:	8:00 PM - 8:50 PM MDT
Room:	C
Chair and co-Chair:	Hongyi Xu and Xu Guo

ID	Title	Presenter
267	*Machine-learning Based Multi-fidelity Surrogate Modeling Methods* by Zhang, C., Liu, L., Xu, Y., Song, X. and Lv, L.	Chao Zhang
366	*An Innovative Design Method of Tire Tread Patterns by Deep Generative Model and Elitist Multi-Objective Search* by Imamra, K., Nishimura, R., Yamasaki, S., Yaji, K. and Fujita, K.	Kazuki Imamura
448	*Efficient tire pattern design using deep learning methodology* by Lee, M., Park, Y., Jo, H., Kim, K., Lee, S. and Lee, I.	Mingyu Lee
573	*Generating airfoil with specific lift coefficients using conditional GAN and conditional VAE* by Yonekura, K., Miyamoto, N. and Suzuki, K.	Kazuo Yonekura

Design optimization for advanced manufacturing - VI

Day:	Wednesday - June 16, 2021
Time:	8:00 PM - 8:50 PM MDT
Room:	D
Chair and co-Chair:	Daniel Tortorelli and John Evans

ID	Title	Presenter
155	*Concurrent Topology Optimization of Shells and Self-supporting Infills for additive manufacturing* by Lu, Y., Liu, Y. and Zhou, M.	Yufan Lu
351	*Topology Optimization of Supports and Infills for Additive Manufacturing with Process Simulations and Geometric Constraints* by Zhou, M., Liu, Y., Wei, C. and Lu, Y.	Mingdong Zhou
441	*Multi-objective design optimization of process parameters in cold forging minimizing risk of material damage* by Kitayama, S., Kadoya, S., Takano, M. and Kobayashi, A.	Satoshi Kitayama
567	*Topology Optimization for Fused Filament Fabrication with Weak Deposition Bonds* by Jewett, J.	Jackson Jewett

Socializing - 7

Day: Wednesday - June 16, 2021

Time: 9:00 PM - 10:00 PM MDT

Room: Lounge

Event	Organizer
Roundtable: Software design, development and management practices (Coffee Break Room)	Miguel Aguilo

Thursday - June 17, 2021

Morning Sessions – 7:00 - 11:00 AM MDT

Multi-objective topology optimization

Day: Thursday - June 17, 2021

Time: 7:00 AM - 7:50 AM MDT

Room: A

Chair and co-Chair: Nozomu Kogiso and Palaniappan Ramu

ID	Title	Presenter
36	*Multi-Objective Optimization under Uncertainty of Process Parameters in Additive Manufacturing* by Kapusuzoglu, B., Nath, P., Sato, M., Mahadevan, S. and Witherell, P.	Berkcan Kapusuzoglu
107	*Exploration of Pareto Front for Multi-objective Topology Optimization Problem Incorporating an Adaptive Weight and a Configuration-based Clustering Scheme* by Ryu, N. and Min, S.	Seungjae Min
245	*Multi-objective optimization of gear ratio and shifting patterns in multi-speed transmission electric vehicles using transmission efficiency map* by Jo, J., Kwon, K. and Min, S.	Junhyeong Jo
457	*Six-objective optimization of electrothermal microactuators by means of Game Theory and Artificial Immune System* by Dugosz, A., Jarosz, P. and Schlieter, T.	Adam Dugosz
575	*Cooperative framework for many-objective crash optimization* by Dommaraju, N., Bujny, M., Menzel, S., Olhofer, M. and Duddeck, F.	Nidhi Nivesh Dommaraju

Level set methods

Day:	Thursday - June 17, 2021
Time:	7:00 AM - 7:50 AM MDT
Room:	B
Chair and co-Chair:	Shinji Nishiwaki and Charles Dapogny

ID	Title	Presenter
172	*An overview on the Interface-enriched Generalized Finite Element Method (IGFEM) for level set-based topology optimization* by Aragón, A. M., van den Boom, S., Zhang, J. and van Keulen, F.	Alejandro Aragón
228	*3D multi-material topology optimization with B-spline parameterized level set method* by Zhao, J., Zhao, R. and Wang, C.	Junpeng Zhao
231	*A Level set band method for level set-based topology optimization methods* by Jiang, Z. and Wei, P.	Peng Wei
261	*A CAD Aware Meshfree Topology Optimization Framework using Moments* by Kambampati, S., Taber, A., Kumar, G., Shapiro, V. and Kim, H. A.	Sandilya Kambampati
333	*Explicit Level Set Topology Optimisation Method for Multidisciplinary Applications* by Bontoft, E. K., Zhang, Y., Dubrovka, R. and Toropov, V.	Elliot Bontoft
419	*Shape and Material Optimization of Problems with Dynamically Evolving Interfaces* by Maute, K., De, S. and Doostan, A.	Kurt Maute
453	*Level Set-based Topology Optimization for Maximizing Linear Buckling Load* by Ishida, N., Kondoh, T., Furuta, K., Izui, K. and Nishiwaki, S.	Ishida Naoyuki

Design optimization of acoustic materials and devices - I

Day: Thursday - June 17, 2021

Time: 7:00 AM - 7:50 AM MDT

Room: C

Chair and co-Chair: Eddie Wadbro and Fred van Keulen

ID	Title	Presenter
110	*Transient vibroacoustic structural optimization for tailored broadband characteristics* by Aage, N. and Dilgen, C. B.	Niels Aage
150	*Vibroacoustic shape optimization* by Andersen, P. R., Nielsen, D. G., Henríquez, V. C., Aage, N. and Kook, J.	Peter Risby Andersen
152	*Topology optimization for two-layered acoustic metasurfaces based on a two-scale homogenization method* by Noguchi, Y. and Yamada, T.	Yuki Noguchi
300	*Research on topology optimization of acoustic-structural coupling system under explicit framework* by Xu, L., Zhang, W. and Guo, X.	Lei Xu
347	*Topology Optimization of an Acoustic Diode?* by Bokhari, A. H., Mousavi, A., Niu, B. and Wadbro, E.	Seyedabbas Mousavi
405	*Shape sensitivity analysis for embedding methods without domain transformations: application to acoustics* by Berggren, M.	Martin Berggren
574	*A level-set approach for multiple materials based on reaction-diffusion equation applied to inversion problems in acoustic wave propagation* by Castro, P. B. d., Silva, E. C. N. and Fancello, E. A.	Paulo Bastos de Castro

Shape optimization - I

Day:	Thursday - June 17, 2021
Time:	7:00 AM - 7:50 AM MDT
Room:	D
Chair and co-Chair:	Kai-Uwe Bletzinger and Pierre Duysinx

ID	Title	Presenter
70	*Shape optimization of auxetic bending-active gridshells with non-uniform reentrant patterns* by Sakai, Y. and Ohsaki, M.	Yusuke Sakai
97	*Eulerian Shape Optimization by Density Advection* by Bartz, R., Franke, T., Fiebig, S. and Vietor, T.	Ronald Bartz
160	*Optimal Strength Of Shaft-hub Assembly* by Pedersen, N. L.	Niels Leergaard Pedersen
227	*Multidisciplinary design optimization of the shape and structure of Blended-wing-body Underwater Glider* by Fu, C., Wang, P., Dong, H. and Zhang, Y.	Chongbo Fu
315	*A shape optimization approach towards scalable algorithms allowing large deformations* by Onyshkevych, S., Escobar, J. A. P. and Siebenborn, M.	Jose Alfonso Pinzon Escobar
491	*Quasi-Newton Relaxed Gradient Projection method in large constrained node-based shape optimization problems* by Antonau, I., Hojjat, M. and Bletzinger, K.	Ihar Antonau

Design optimization considering eigenfrequency and dynamics - I

Day:	Thursday - June 17, 2021
Time:	7:00 AM - 7:50 AM MDT
Room:	E
Chair and co-Chair:	Mattias Schevenels and Jüri Majak

ID	Title	Presenter
29	*Material Nonlinear Numerical Method of Dynamic Topology Optimization on Equivalent Static Loads Method* by Li, Y. and He, X.	Yongxin Li
41	*Topology optimization of eigenvalue problems* by Dalklint, A., Wallin, M. and Tortorelli, D.	Anna Dalklint
147	*Nonlinear dynamic response optimization using Difference based Equivalent Static Loads combined with adaptive time selection* by Triller, J., Immel, R. and Harzheim, L.	Jens Triller
321	*Damper placement optimization for truss structure vibration control* by Dai, Z., Chen, S. and Huang, H.	Ziqi Dai
510	*Sensitivity analysis of a floating frame of reference approach to flexible multibody systems: Application to the design optimization of a Tyrolean weir cleaning mechanism* by Gufler, V., Wehrle, E. and Vidoni, R.	Veit Gufler
533	*Investigation of Combining Vertex Morphing and Rigid Body Parametrization* by Schmölz, D., Geiser, A. and Bletzinger, K.	David Schmölz

Design optimization with applications to automotive problems - I

Day:	Thursday - June 17, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	A
Chair and co-Chair:	Yuqing Zhou and Lise Noel

ID	Title	Presenter
74	*About Tailor Rolled Blank parts in the multi-disciplinary optimization process of a vehicle* by Klinke, N., Kobelev, V. and Schumacher, A.	Niklas Klinke
75	*Data-driven modeling of impact dynamics using spatiotemporal graph neural network* by Wen, Z., Wang, H., Li, Y. and Peng, Y.	Ziming Wen
76	*LEOPARD/topo nonlinear topology optimization overview of the implemented methods and models* by Fiebig, D. S., Franke, D. T. and Bartz, R.	Sierk Fiebig
363	*A Convex Optimization Framework for Minimum Lap Time Design and Control of Electric Race Cars* by Borsboom, O., Fahdzyana, C. A., Hofman, T. and Salazar, M.	Olaf Borsboom
462	*Optimal Structural Design of Vehicle Wheels through Multi-Objective Optimization and Artificial Intelligence* by Ballo, F., Gobbi, M. and Previati, G.	Federico Ballo

Design of metamaterials - I

Day:	Thursday - June 17, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	B
Chair and co-Chair:	Fabian Wein and Alejandro Aragón

ID	Title	Presenter
22	*A Two-Variable Topology Optimization Approach for Simultaneously Macro Layout and Local Grading of Periodic Lattice Structures with Additive Manufacturing Constraints* by Strömberg, N.	Niclas Strömberg
216	*Level-set Topology Optimization of Mechanoluminescent Materials* by Kazemi, H., Zhao, J., Castro, D., Jeong, S. M., Bae, J. and Kim, H. A.	Hesaneh Kazemi
272	*Topology optimization of differentiable microstructures* by Zhai, X., Wang, W., Chen, F. and Wu, J.	Xiaoya Zhai
284	*Microstructural topology optimization for patch-based sandwich panel with desired in-plane thermal expansion and structural* by Yang, Z., Zhang, Y. and Liu, S.	Zihao Yang
337	*Systematic design and investigation of 3D hierarchical materials with enhanced buckling strength* by Wang, F.	Fengwen Wang

Surrogate modeling for design optimization - I

Day:	Thursday - June 17, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	C
Chair and co-Chair:	Palaniappan Ramu and Xueguan Song

ID	Title	Presenter
18	*Efficient high-dimensional Kriging modeling via the active subspace method* by Chen, L., Qiu, H. and Gao, L.	Liming Chen
42	*Surrogate modeling for high-dimensional problems via image-driven manifold learning* by Li, Y.	Yu Li
90	*An Iso-volumetric Weighting Approach to Increase Efficiency of Stratified Samplings* by Kaps, A., Komeilizadeh, K. and Duddeck, F.	Arne Kaps
256	*Structural Optimization Using Bayesian Strategies with Compositional Kernel Search* by Winter, J., Vietor, T., Fiebig, S. and Franke, T.	Jens Winter
388	*A Screening-based Gradient-enhanced Multi-fidelity Gaussian Process model for Black-box Function Approximation* by Lin, Q., Zhou, Q. and Hu, J.	Quan Lin

Shape optimization - II

Day:	Thursday - June 17, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	D
Chair and co-Chair:	Emilio Carlos Nelli Silva and Mathias Wallin

ID	Title	Presenter
133	*Shape optimization of SMA structures with respect to fatigue* by Gu, X., Zhu, J., Zhang, W. and Moumni, Z.	Xiaojun Gu
165	*Nodal move limits for shape optimization of cladded gridshells* by Gythiel, W. and Schevenels, M.	Willem Gythiel
168	*Variational shape sensitivity analysis of an elastoplastic material using IGA* by Ghasemi, S. A., Liedmann, J. and Barthold, F.	Seyed Ali Ghasemi
193	*A NURBS-based Shape Optimization Design of Structures and Materials* by Najafi, A. R.	Ahmad Najafi
240	*Shape optimization of aero-engines turbine disks based on mesh deformation method* by Huang, L. and Tian, K.	Lei Huang
522	*Multi-body and Multi-physics Shape Optimization Using Vertex Morphing Method* by Alsayed Ahmad, M., Hojjat, M. and Bletzinger, K.	Moustafa Alsayed Ahmad

Design optimization considering eigenfrequency and dynamics - II

Day:	Thursday - June 17, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	E
Chair and co-Chair:	Alberto Donoso and Suguang Dou

ID	Title	Presenter
164	*Weakly and fully coupled level set-based topology optimization of flexible multibody systems* by Held, A. and Seifried, R.	Ali Azari Nejat
209	*Topology Optimization for Improving Stability of a Rotating Thin Plate* by Sun, J., Tian, Q., Wang, F. and Hu, H.	Jialiang Sun
320	*Sensitivity Analysis of Geometrically Exact Beam Formulation in the Local Frame* by Todesco, J. and Brüls, O.	Juliano Todesco
386	*Topology optimization of vibrating thin-walled stiffened plate with damping layer* by Liu, H., Yan, J. and Leng, Y.	Bin Niu
461	*Topology optimization for large-scale MIMO frequency response using reduced-order models* by Delissen, A., Astudillo, R., van Keulen, F., van Gijzen, M. and Langelaar, M.	Arnoud Delissen

Stress-constrained topology optimization - I

Day:	Thursday - June 17, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	A
Chair and co-Chair:	Oliver Giraldo-Londono and Matthijs Langelaar

ID	Title	Presenter
30	*A Maximum Rectifier Function for Stress-Constrained Topology Optimization* by Norato, J., Smith, H., Deaton, J. and Kolonay, R.	Julián Norato
109	*Stress-based topology optimization with precise and explicit geometric boundaries* by Shakour, E. and Amir, O.	Emad Shakour
372	*Topology optimization with stress constraints and time-varying body forces* by Hermann, N. and Held, A.	Alexander Held
577	*Stress constrained topology optimization* by Granlund, G., Wallin, M. and Tortorelli, D. A.	Gunnar Granlund

Design optimization with applications to automotive problems - II

Day:	Thursday - June 17, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	B
Chair and co-Chair:	Sierk Fiebig and Yingchun Bai

ID	Title	Presenter
77	*Using sensitivities in a heuristic nonlinear topology optimization* by Franke, T., Fiebig, S. and Bartz, R.	Thilo Franke
105	*Heuristics based on expert knowledge for improving the topology of profile structures under axial crash loading in the scheme of the Graph and Heuristic based Topology Optimization* by Sperber, J., Ortmann, C., Schneider, D. and Schumacher, A.	Johannes Sperber
151	*Optimization for Super Element Interior NVH Responses* by Liu, S., Mandal, D., Guan, J. and Pagaldipti, N.	Shaobin Liu
415	*Truck door light weight designs using topology optimization* by Duysinx, P., Weber, W., Remes, J., Stroobants, J., Bruijn, F. D., Heijster, J. P., Deckers, E., Lopez, C. and Eyckens, P.	Pierre Duysinx
504	*Uncertainty management framework for automotive crash simulations* by Jehle, J., Lange, V. and Gerdts, M.	Jonas Jehle

Shape optimization - III

Day:	Thursday - June 17, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	C
Chair and co-Chair:	Niels Leergaard Pedersen and Niclas Strömberg

ID	Title	Presenter
166	*Free vibration optimization of viscoelastic cantilever beams and plates* by Diani, J., Allaire, G. and Amstutz, S.	Antoni Joubert
241	*Shape Optimization Method for Mutual Coupling Reduction of the MIMO Antenna-array* by Tang, Y., Gao, R., Deng, S. and Liu, S.	Yi Tang
330	*Shape optimization of the forged automotive component with consideration of the unstable behavior* by Sebastjan, P. and Ku, W.	Przemysław Sebastjan
518	*Node-Based Shape Optimization and Mechanical Test Validation of Complex Metal Components Manufactured by Laser Powder Bed Fusion.* by Diller, J., Geiser, A., Siebert, D., Oberhaidinger, F., Radlbeck, C., Mensinger, M., Wüchner, R. and Bletzinger, K.	Aditya Ghantasala
540	*Status and potentials of free form shape optimization* by Bletzinger, K. and Zhou, M.	Kai-Uwe Bletzinger

Design optimization considering eigenfrequency and dynamics - III

Day: Thursday - June 17, 2021

Time: 9:00 AM - 9:50 AM MDT

Room: D

Chair and co-Chair: Jonathan Russ and Federico Ferrari

ID	Title	Presenter
178	*Topology Optimization of Reduced Flexible Dynamical Systems with Unilateral Contacts* by Schmidt, T. and Seifried, R.	Timo Schmidt
215	*Design of periodically stiffened panels for vibration control using data-driven optimization* by He, M. and Ding, Q.	Meng-Xin He
263	*Data-Driven Multiscale Design with Multiclass Microstructures for Natural Frequency Maximization* by Wang, L., Beek, A. v., Da, D., Chan, Y., Liu, Z., Zhu, P. and Chen, W.	Liwei Wang
481	*Orientational Design of 3D Anisotropic Materials* by Majak, J., Bassir, D. and Mehrparvar, M.	Jüri Majak
519	*Topology optimization for the control of eigenfrequencies with applications to MEMS and vibro-acoustics* by Giannini, D., Aage, N., Braghin, F., Schevenels, M. and Reynders, E.	Daniele Giannini

Novel topology optimization techniques - V

Day:	Thursday - June 17, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	E
Chair and co-Chair:	Charles Dapogny and Zheng Li

ID	Title	Presenter
112	*Efficient approximate and exact reanalysis methods for the 0-1 topology modification* by Xie, X., Guo, G. and Zuo, W.	Xinyu Xie
114	*Reduction of the multiple load optimum material design to the linear constrained problem* by Czarnecki, S. and Lewiński, T.	Tomasz Lewiński
157	*Target reaction force design of continuum structures using topology optimization* by Hvejsel, C. F.	Christian Frier Hvejsel
302	*A Multi-Material Topology Optimization Method for the Resolution of Interfaces by means of the CISAMR-Algorithm* by Renz, R., Frank, N. and Albers, A.	Robert Renz
323	*Investigating inexact iterative solvers in nested topology optimization* by Amir, O.	Oded Amir
329	*Insights into numerical integration in feature mapping* by Wein, F.	Fabian Wein

Socializing - 8

Day: Thursday - June 17, 2021

Time: 10:00 AM - 11:00 AM MDT

Room: Lounge

Event	Organizer
ISSMO Women Networking II (Coffee Break Room)	X. Shelly Zhang

Thursday - June 17, 2021

Evening Sessions – 6:00 - 10:00 PM MDT

SOTA Talks - 1

Day: Thursday - June 17, 2021

Time: 6:00 PM - 6:50 PM MDT

Room: Auditorium

Chair: Samy Missoum

Title	Presenter
Topology optimization: methodologies and applications	Josephine Carstensen
From Surrogate Modeling to Physics-informed Neural Networks What Has Machine Learning Done for Engineering Analysis and Design?	Felipe Viana

Stress-constrained topology optimization - II

Day:	Thursday - June 17, 2021
Time:	7:00 PM - 7:50 PM MDT
Room:	A
Chair and co-Chair:	Miguel Salazar de Troya and Daniel Milbrath De Leon

ID	Title	Presenter
28	*Stress-constrained topology optimization based on IGA-MFSE method* by Lei, Z., Fang, M. and Yang, D.	Zhenzeng Lei
65	*Stress-based structural optimization design under load position uncertainty* by Oh, M., Lee, D. and Yoo, J.	Minkyu Oh
198	*Topology optimization design under stress and temperature constraints* by Meng, Q. and Xu, B.	Qingxuan Meng
238	*Stress-constrained topology optimization with inhomogeneous microstructure* by Zhao, R., Zhao, J. and Wang, C.	Ruijie Zhao
412	*Topology optimization with local stress constraints using a unified failure criterion* by Giraldo-Londoño, O. and Paulino, G. H.	Oliver Giraldo-Londoño

Design optimization of acoustic materials and devices - II

Day:	Thursday - June 17, 2021
Time:	7:00 PM - 7:50 PM MDT
Room:	B
Chair and co-Chair:	Boyan Lazarov and Jonathan Russ

ID	Title	Presenter
85	*Acoustic hologram with phased arrays via topology optimization* by Li, W. and Huang, X.	Weibai Li
191	*Customized inverse design of broadband acoustic metamaterials* by Dong, H., Zhao, S., Shen, C., Cummer, S. A., Zhang, C., Wang, Y., Cheng, L. and Fang, D.	Hao-Wen Dong
232	*A robust topology optimisation for acoustic-elastodynamic coupled structures with broad working bandwidths* by Qin, J., Isakari, H., Takahashi, T. and Matsumoto, T.	Jincheng Qin
293	*Multi-scale optimal design method of anisotropic acoustic metamaterials based on topology optimization and high-frequency homogenization method* by Kurioka, H., Noguchi, Y., Izui, K., Yamada, T. and Nishiwaki, S.	Shinji Nishiwaki
348	*Topology optimization of full and directional band gap acoustic metamaterials* by Zhang, X. and Luo, Y.	Xiaopeng Zhang

Design of metamaterials - II

Day:	Thursday - June 17, 2021
Time:	7:00 PM - 7:50 PM MDT
Room:	C
Chair and co-Chair:	Yoon Young Kim and Hesaneh Kazemi

ID	Title	Presenter
104	*Topology optimization using the representative volume element method and machine learning for functionally graded composite materials* by Kim, C., Lee, J. and Yoo, J.	Cheolwoong Kim
161	*Concurrent shape optimization for multiscale structure using Hź gradient method* by Fujioka, M. and Shimoda, M.	Minami Fujioka
202	*Topology Optimization of Monolayer Metamataerials for Total Mode Conversion of Elastic Waves* by Yoon, W. U., Lee, J. S. and Kim, Y. Y.	Won Uk Yoon
398	*Investigation on numerical analysis and mechanics experiments of topology optimization of functionally graded lattice structure* by Liu, L., Wang, T., Li, Z., Liu, W. and Yi, B.	Long Liu
404	*Optimal plate microstructures with ultimate stiffness for arbitrary multi-loadings* by Wang, Y., Groen, J. P. and Sigmund, O.	Yiqiang Wang
466	*A heterogeneous lattice structure topology optimization method considering the stress constraint* by Liu, J., Xu, S., Huang, J. and Ma, Y.	Shuzhi Xu

Design optimization for advanced manufacturing - VII

Day:	Thursday - June 17, 2021
Time:	7:00 PM - 7:50 PM MDT
Room:	D
Chair and co-Chair:	Qing Li and Daniel Milbrath De Leon

ID	Title	Presenter
67	*Topology Optimization of Self-supporting Infills for Additive Manufacturing* by Liu, Y., Wei, C. and Zhou, M.	Yichang Liu
195	*Three-dimensional topology optimization considering overhang constraint in B-spline space* by Zhang, W., Wang, C., Zhou, L. and Gao, T.	Che Wang
576	*Variable lattice density optimization based on sequential inherent strain method used in additive manufacturing process* by Takezawa, A., Chen, Q. and To, A.	Akihiro Takezawa

Surrogate modeling for design optimization - II

Day:	Thursday - June 17, 2021
Time:	8:00 PM - 8:50 PM MDT
Room:	A
Chair and co-Chair:	Xueguan Song and Youngsoo Choi

ID	Title	Presenter
106	*An adaptive PCE-HDMR approach for high dimensional metamodeling* by Yue, X., Zhang, J. and Gong, W.	Jian Zhang
158	*High-dimensional Global Optimization Method based on Decomposition and Knowledge Transfer* by Guo, Z.	Qineng Wang
226	*A Surrogate-based Layout-shape coupling Optimization Strategy for Blended-Wing-Body Underwater Gliders* by Chen, W., Wang, P., Dong, H. and Yu, X.	Weixi Chen
280	*A hierarchical surrogate assisted constrained particle swarm optimization method for expensive black-box optimization problems* by Tao, K.	Kanghui Tao
313	*A multi-model fusion based mode-pursuing sampling method for expensive black-box optimization problems* by Wang, R.	Ruobing Wang
497	*Visual exploration of response space as a function of sampling density in input DoE* by Sushil, R. R. and Ramu, P.	Rashmi Rama Sushil

Design optimization considering eigenfrequency and dynamics - IV

Day:	Thursday - June 17, 2021
Time:	8:00 PM - 8:50 PM MDT
Room:	B
Chair and co-Chair:	Graeme Kennedy and Jianhua Rong

ID	Title	Presenter
63	*Free-form optimization of vibration lures under real loading conditions for maximizing their fundamental frequencies* by Shi, J., Shimoda, M. and Sakai, S.	Jin-Xing Shi
217	*Shape preserving design for structures under harmonic resonance response* by Wang, Y., Zhu, J., Li, Y., Liu, T., Wang, J. and Zhang, W.	Yulei Wang
350	*Shorten Transient State Duration of Forced Vibration by Structural Optimization* by Yan, K. and Wang, B. P.	Kun Yan
451	*Research on overall design method and concept realization of mechanical structure* by Li, T. and Sun, W.	Tianjian Li
509	*Beam System Optimization with Flexible Multibody Dynamics Considering Nonlinearity of Large Deformation, Mechanization and Contact* by Du, J. and Yang, C.	Yang Cheng
550	*An Assessment of Topology Optimization Algorithms on Large-Scale Compliance and Eigenvalue Problems* by Fu, Y. and Kennedy, G. J.	Yicong Fu

Machine learning for design optimization - VI

Day:	Thursday - June 17, 2021
Time:	8:00 PM - 8:50 PM MDT
Room:	C
Chair and co-Chair:	Amir H Gandomi and X. Shelly Zhang

ID	Title	Presenter
294	*CNN-driven Approximate Algorithm of Topology Optimisation Based on Initial Stress Learning* by Jun, Y., Qi, Z. and Qi, X.	Jun Yan
395	*Data-driven topology design: A possibility of sensitivity-free structural optimization by deep generative models* by Yamasaki, S., Yaji, K. and Fujita, K.	Shintaro Yamasaki
428	*Designing Phononic Bandgap Metamaterials with a Gaussian Mixture-Variational Autoencoder* by Wang, Z., Xian, W., Baccouche, M. R., Lanzerath, H., Li, Y. and Xu, H.	Hongyi Xu
473	*A mechanistic-based data-driven approach to accelerate structural topology optimization through finite element convolutional neural network (FE-CNN)* by Yue, T., Yang, H., Du, Z., Elkhodary, K. I., Tang, S. and Guo, X.	Tianle Yue

Socializing - 9

Day: Thursday - June 17, 2021

Time: 9:00 PM - 10:00 PM MDT

Room: Lounge

Event	Organizer
Roundtable: Artificial Intelligence and Machine Learning (Coffee Break Room)	Raissi Maziar, Subhayan De

Friday - June 18, 2021

Morning Sessions – 7:00 - 11:00 AM MDT

SOTA Talks - 2

Day: Friday - June 18, 2021
Time: 7:00 AM - 7:50 AM MDT
Room: Auditorium
Chair: Erik Lund

Title	Presenter
Digital transformation and optimization	Yoo Jeong Noh
System analysis and design in uncertainty	Mathieu Balesdent

Multi-material topology optimization

Day:	Friday - June 18, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	A
Chair and co-Chair:	Erik Lund and Fabian Wein

ID	Title	Presenter
417	*New concepts of lightweight gearbox rear covers made of aluminum and plastic using multi-material topology optimization* by Koutla, I., Jossieaux, J., Deserranno, C., Bruyneel, M., Lopez, C., Eyckens, P. and Duysinx, P.	Ioanna Koutla
434	*Layout design of thin-walled structures with lattices and stiffeners using multi-material topology optimization* by Li, Y., Song, L., Tang, L., Gao, T. and Zhang, W.	Yang Li
511	*Cellular Automata Mimicking Bodies Collision Applied to Multi-Material Topology Optimization* by Tajs-Zieliska, K. and Bochenek, B.	Katarzyna Tajs-Zielinska
534	*Level-set Multi-material Topology Optimization with the XFEM* by Christopherson, A., Maute, K., Doble, K., Noel, L. and Schmidt, M.	Adam Christopherson
556	*Multi-Material Topology Optimization for Embodied Carbon* by Holley, C., Ching, E. and Carstensen, J. V.	Claire Holley

Software

Day:	Friday - June 18, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	B
Chair and co-Chair:	Sierk Fiebig and Miguel Aguilo

ID	Title	Presenter
125	*An Efficient 180-line Matlab code for Adaptive Bubble Method (ABM) based topology optimization* by Yu, D. and Cai, S.	Daoyuan Yu
206	*TopOpt.jl: Truss and Continuum Topology Optimization, Interactive Visualization, Automatic Differentiation, and More* by Huang, Y. and Mohamed, M. T.	Yijiang Huang
339	*A comparative study of educational codes on topology optimization* by Wang, C., Zhao, Z., Zhou, M., Sigmund, O. and Zhang, X. S.	X. Shelly Zhang
458	*10-Million-Voxels Interactive Topology Optimization from Mobiles Devices* by Nguyen, T. T., Aage, N., Bærentzen, J. A. and Sigmund, O.	Tuan Nguyen
561	*Stress-constrained topology optimization: A stress aggregation-free educational software* by Paulino, G. H. and Giraldo-Londoño, O.	Glaucio Paulino
572	*Enhanced synergy between topology optimization and additive manufacturing with integrated end-to-end digital innovation platform: Application to space components* by Duboeuf, F., Lemaire, E., Remouchamps, A., van Eekelen, T., Chary, C., François, M., Vargalui, A. and Rodrigues, G.	Frédéric Duboeuf

Truss topology optimization - I

Day:	Friday - June 18, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	C
Chair and co-Chair:	Matthew Gilbert and Karol Bołbotowski

ID	Title	Presenter
62	*Optimal design of grid systems for tall buildings using lattice structures* by Ismail, H., Bruggi, M. and Logo, J.	Janos Logo
199	*Concurrent topology and geometry optimization of truss structures with global stability constraints* by Weldeyesus, A. G., Gondzio, J., He, L., Gilbert, M., Shepherd, P. and Tyas, A.	Alemseged Weldeyesus
269	*A new growth method for truss shape and topology optimization* by Kozłowski, G. and Sokół, T.	Tomasz Sokół
403	*Truss structure topology optimization for maximum shakedown multiplier* by Li, K. and Cheng, G.	Kai Li
520	*Interactive layout optimization of long-span structures subject to self-weight and multiple load-cases* by Fairclough, H., Gilbert, M., Firth, I., Green, D., Pritchard, T. and Trodden, P.	Helen Fairclough

Topology optimization considering uncertainty - I

Day:	Friday - June 18, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	D
Chair and co-Chair:	Franz-Joseph Barthold and Carl-Johan Thore

ID	Title	Presenter
49	*Robust topology optimization when nominal and expected compliance are the same* by Csebfalvi, A. and Logo, J.	Aniko Csebfalvi
194	*Worst-case design of plane frames using order statistics* by Shen, W., Ohsaki, M. and Yamakawa, M.	Wei Shen
447	*Modeling of geometric uncertainties in topology optimization via the shift of design nodes.* by Jonghyun, K. and Lee, I.	Jonghyun Kim
525	*Incorporating uncertainties in Topology Optimization: A Stochastic Reduced Order Model approach* by Torres, A., Warner, J., Aguilo, M. and Guest, J.	Alberto Torres

Optimization algorithms - I

Day:	Friday - June 18, 2021
Time:	8:00 AM - 8:50 AM MDT
Room:	E
Chair and co-Chair:	Daniel Wilke and Mathias Stolpe

ID	Title	Presenter
86	*Significant input variable selection for design optimization of piezoelectric energy harvester* by Kim, H., Kim, T. and Lee, T. H.	Hansu Kim
409	*Computing multiple solutions of topology optimization problems* by Papadopoulos, I., Farrell, P. and Surowiec, T.	Ioannis Papadopoulos
423	*Path Planning of Ship Collision Avoidance Using Improved A* Algorithm* by Seo, C., Noh, Y. and Abebe, M.	Seo Chanhee
523	*The continuous stochastic gradient method with applications in topology optimization* by Pflug, L., Stingl, M., Greishammer, M., Nees, N. and Uihlein, A.	Lukas Pflug
537	*Hybrid Fireworks-Evolutionary Optimization Algorithm* by Paździor, P. and Szczepanik, M.	Paweł Paździor

Topology optimization with manufacturing constraints

Day:	Friday - June 18, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	A
Chair and co-Chair:	Niclas Strömberg and Claus B.W. Pedersen

ID	Title	Presenter
80	*Manufacturing Cost-Driven Topology Optimization of Welded Steel Frame Structures based on the Geometry Projection Method* by Gu, H. and Norato, J.	Hongye Gu
174	*An Advection-Diffusion based Filter for Machinable Designs in Topology Optimization* by Høghøj, L. C. and Träff, E. A.	Erik Albert Träff
354	*Parameterised Post-Processing of Topology Optimisation Results* by Christensen, J., Sehmi, M. and Wilson, A.	Maninder Sehmi
489	*A prototype software for topology optimization considering production constraints and multi-material design rules* by Lopez, C., Rosseel, E., Naets, F., Deckers, E., Koutla, I., Duysinx, P. and Eyckens, P.	Carlos Lopez Rodriguez
517	*Topology optimization for multi-axis machining* by Qian, X. and Gasick, J.	Joshua Gasick
526	*Machining Constraints in Topology Optimization using Projection Methods* by Lee, H. Y. and Guest, J. K.	Hak Yong Lee

Truss topology optimization - II

Day:	Friday - June 18, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	B
Chair and co-Chair:	Tomasz Sokół and Thilo Franke

ID	Title	Presenter
138	*Combination of Structural Optimization Methods to Design Optimal Truss Structures* by Ulukulu, K., Fiebig, S. and Franke, T.	Kübra Ulukulu
175	*Combined fail-safe and robust optimization of beam cross-section properties* by Stolpe, M.	Mathias Stolpe
400	*Arch systems of minimum weight* by Dzieranowski, G. and Czubacki, R.	Grzegorz Dzierzanowski
551	*Optimal design of reinforced concrete slabs* by Gilbert, M., Liew, A., Lu, H., He, L. and Torelli, G.	Matthew Gilbert
554	*Vaults of minimum weight and compliance - form finding via 2D convex problem* by Bołbotowski, K.	Karol Bołbotowski

Topology optimization considering uncertainty - II

Day:	Friday - June 18, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	C
Chair and co-Chair:	Janos Logo and Jianbin Du

ID	Title	Presenter
375	*Stochastic topology optimization for superior robustness* by Neumannn, D. J.	Johannes Neumann
516	*Topology optimization with worst-case material defects* by Greifenstein, J. and Stingl, M.	Jannis Greifenstein
530	*Topology optimization with uncertain Dirichlet data* by Thore, C.	Carl-Johan Thore
536	*Microscale Uncertainty in Macroscale Topology Optimization* by De, S., Maute, K. and Doostan, A.	Subhayan De

Optimization algorithms - II

Day:	Friday - June 18, 2021
Time:	9:00 AM - 9:50 AM MDT
Room:	D
Chair and co-Chair:	Chao Hu and Palaniappan Ramu

ID	Title	Presenter
390	*Exact Size and Shape Optimization of Additively Manufactured Lightweight Planar Frame Structures with Manufacturability Constraints and Modern Global Optimization Methods* by Toragay, O., Silva, D. F., Vinel, A. and Shamsaei, N.	Oguz Toragay
397	*Sequential separable conservative approximate integer programming algorithm for discrete variable structure topology optimization* by Sun, K., Liang, Y. and Cheng, G.	Kai Sun
452	*On exact separabel models in structural optimization* by Pflug, L.	Michael Stingl
469	*Global optimality in minimum compliance topology optimization of frame and shell structures* by Tyburec, M., Zeman, J., Kruík, M. and Henrion, D.	Marek Tyburec
527	*L-moments enabled modified Chebyshev bounds for Uncertainty Quantification* by Jain, N., Ramu, D. P. and Jayaraman, D.	Naman Jain
528	*Design Variable Scaling for the Vertex Morphing Method* by Geiser, A., Schmölz, D. and Bletzinger, K.	Armin Geiser

Socializing - 10

Day: Friday - June 18, 2021

Time: 10:00 AM - 11:00 AM MDT

Room: Lounge

Event	Organizer
Design Optimization in Industry (Coffee Break Room)	Julian Norato

Index of Abstract IDs, Presenters, Authors, and Session Chairs

Abstract IDs

Presenters

Authors

Session Chairs