6TH INTERNATIONAL CONFERENCE ON MULTIDISCIPLINARY DESIGN OPTIMIZATION AND APPLICATIONS
October 16-19, Paris, France

www.mdoa2024.org

PROGRAM

WEDNESDAY, MORNING, OCTOBER 16

08:30 - 09:30	**REGISTRATION**
09:30 – 9:50	Opening Ceremony **HALL** : 11_1.V-Amphi Prouvé- Access 11-RDC
	Keynote Lectures : Chairman : David BASSIR & Joseph ZARKA
9:50 - 10:30	**Plenary keynote Lecture : Prof. Weihong Zhang** *Northwetern Polytechnical University, China* *Member of Chinese Academy of Sciences* **RECENT ADVANCED IN STRUCTURAL OPTIMIZATION**
10:30- 10:50	**Coffee Break**
10:50 - 11:20	**keynote Lecture : Professor Piotr Breitkopf** *Université de Technologie de Compiègne, France* **MODEL - ORDER REDUCTION FOR MACHINE LEARNING IN COMPUTATION MECHANICS**
11:20– 11:50	**keynote Lecture : Dr. Mathieu Balesdent** Director of Research *ONERA (French Aerospace Lab), France* **QUALITY-DIVERSITY APPROACHES FOR CONSTRAINED DESIGN OPTIMIZATION PROBLEMS**
11:50 - 12:20	**keynote Lecture : Professor Abdelkhalak EL HAMI** *INSA Rouen, France* **RELIABILITY OF COMPLEX MECHATRONICS SYSTEMS**
12:20 - 14:30	**Lunch**

WEDNESDAY, AFTERNOON, OCTOBER 16

■ **PHOTO GROUP (14:15-14:25)**

	Session A : 21.1.05 St Martin Access 21, 1st Floor, **Room 5** Chairman : Piotr Breitkopf
14:30 - 14:55	**HUMAN-Robot interaction: Fuzzy AHP and TOPSIS approach** Jüri Majak, Olga Dunajeva, Oleg Shvets, Kadri Ling, Martins Sarkans, Tõnis Raamets *Tallinn University of Technology, Estonia*
14:55 - 15:20	**Optimization of bolted assemblies: influence of the tightening mode on the design and operating performance** Jean Michel Monville & Joseph Zarka *MZ Conseils, France*
15:20 - 15:45	**Case studies of implementing embedded control system framework on Autonomous vehicle** Heiko Pikner, Kristo Karjust, Martin Eerme *Tallinn University of Technology, Estonia*
15:45 - 16:10	**Enhanced Crack Detection in Composite Plates: Integrating Haar Wavelet Transform with Convolutional** Marmar Mehrparvar, Kristo Karjust *Tallinn University of Technology, Estonia*
	Session B : Session A : 21.1.07- St Martin Access 21, 1st Floor, **Room 7** Chairman : Jean Michel MONVILLE
14:30 - 14:55	**Simulation study on driving stability of highways under crosswind environment and design of warning system** GUO Baohua *Henan Polytechnic University, China*
14:55 - 15:20	**Synchrotron Radiation X-ray Micro-Tomography for Investigating the Microstructure of Acrylate-Modified PLA/Lignin Blends Fabricated via Digital Light Processing** Sofiane Guessasma[1], Nicolas Stephant[2], Sylvie Durand[2], and Sofiane Belhabib[3] [1] *INRAE, Research Unit BIA UR1268, Rue Geraudiere, F-Nantes, France* [2]University of Nantes, France [3]*Department of Mechanical Engineering, Nantes Université, IUT, France*
15:20 - 15:45	**Study on Conventional Failure Criteria Optimization for Rock Based on Gauss-Newton Method** Zhezhe Zhang *Henan Polytechnic University, China*
15:45 - 16:10	**Multiphysics coupled modeling of the LPBF process for surface morphology optimization** Xingyue Zhai *Northwetern Polytechnical University, China*
16:10 -16:30	Coffee Break

	Session C : 21.1.05 - St Martin Access 21, 1st Floor, **Room 5** Chairman : Abdelkhalak EL HAMI
16:30 - 16:55	**Enhanced Crack Detection in Composite Plates: Integrating Haar Wavelet Transform with Convolutional** Marmar Mehrparvar, Kristo Karjust *Tallinn University of Technology, Estonia*
16:55 - 17:20	**Numerical estimation of the mechanical behavior of nanocomposite materials.** Ludovic CAUVIN *Université de Technologie de Compiègne, France*
17:20 – 17:45	**Numerical Analysis of Fragment Flight Dynamics Using Haar Wavelet Method** Lenart Kivistik, Martin Eerme, Marmar Mehrparvar, Maarjus Kirs *Tallinn University of Technology, Estonia*
	Session D : Session A : 21.1.07- St Martin Access 21, 1st Floor, **Room 7** Chairman : Joseph ZARKA
16:30 - 16:55	**Local fatigue analysis of shape memory alloys based on interface evolution** Bingqian WANG, Yongjun He, Ziad MOUMNI *ENSTA, Paris, France*
16:55 - 17:20	**Modification of creep rupture life prediction method for 316H austenitic stainless steel** Xiaotong Ma[a], Chenwei Zhang[a], Senyu Lu[a], Xuehua He[c], Lijia Luo[ab], Shiyi Bao[abde] *[a]College of Mechanical Engineering, Zhejiang University of Technology, Hangzhou, China* *[b]Engineering Research Center of Process Equipment and Re-manufacturing of Ministry of Education, Zhejiang University of Technology, Hangzhou, China* *[c]College of Materials Science and Engineering, Zhejiang University of Technology, Huzhou, China* *[d]Key Laboratory for Green Pharmaceutical Technologies and Related Equipment of Ministry of Education, Zhejiang University of Technology, Huzhou, China* *[e]Key Laboratory of Pharmaceutical Engineering of Zhejiang Province, Zhejiang University of Technology, Huzhou, China*
17:20 – 17:45	**Extrudate swell optimization of PLA extrusion based additive manufacturing process** Abel Cherouat*, Thierry Barriere[1] **Université de Technologie de Troyes UTT, France* *[1]UFC, France*

THURSDAY MORNING, OCTOBER 17

9:00 - 10:00	**REGISTRATION**
10:00 – 12:00	**CNAM SCIENCE LABORATORY & MUSEUM VISIT** 2 separate delegations

12:20 - 14:00	**Lunch**

THURSDAY AFTERNOON, OCTOBER 17

Session E : 21.1.05 - St Martin Access 21, 1st Floor, **Room 5**
Chairman : Shiyi BAO

14:00 - 14:25

Strategy Comparison of Cracks Detection on Concrete Using Yolov8

Haochen Chang[a], David Bassir[a,B], Minjun Zhang[bc], Gongfa Chen[d],
[a] *IRAMAT, UMR-7065, Université Technologique de Belfort-Montbéliard, France.*
[b] *Smart Structural Health Monitoring and Control Lab (SSHMC) Lab, DGUT-Cnam Institute, Dongguan University of Technology, China*
[c] *CNAM/CEDRIC, 292 rue Saint Matin, 75003 Paris, France*
[d] *School of Civil and Transportation Engineering, Guangdong University of Technology, China.*

14:25 - 14:50

Topology optimization of lattice structures for target band gaps and optimum volume fraction

F. Gómez-Silva*, R. Zaera, R. Ortigosa and J. Martínez-Frutos

**Department of Continuum Mechanics and Structural Analysis, University Carlos III of Madrid, Avda. de la Un, Spain*

14:50 - 15:15

Lattice Structure Optimization Targeting to Enhance the Thermal Performance of an Injection Mold

Alaeddine Zereg[1, a)] , Mohamed Taher Bouzaher[2, b)] , David Bassir[3,4, c)] and NadhirLebaal[1, d)]
[1] *ICB-COMM, University of Technology Belfort-Montbéliard, 90010 Belfort, France*
[2] *Scientific and Technical Research Centre for Arid Areas (CRSTRA), Biskra, Algeria*
[4]*IRAMAT, UMR-7065, Université Technologique de Belfort-Montbéliard, France.*
[3]*Smart Structural Health Monitoring and Control Lab (SSHMC) Lab, DGUT-Cnam Institute, Dongguan University of Technology, China*

15:15 - 15:40

Numerical Simulation of Plasmonic and Lattice Resonances in Flexible Metasurfaces for Enhanced Mechano-Optical Properties

Wei Tao*, Thomas Maurer[1], Monika Fleischer[2]

**Smart Structural Health Monitoring and Control Lab (SSHMC) Lab, DGUT-Cnam Institute, Dongguan University of Technology, China*
[1]*Laboratory Light, Nanomaterials and Nanotechnologies—L2n, University of Technology of Troyes and CNRS UMR 7076, Troyes, France*
[2]*Institute for Applied Physics and Center LISA+, Eberhard Karls University Tübingen, 72076 Tübingen, Germany*

Session F: 21.1.07- St Martin Access 21, 1st Floor, **Room 7**
Chairman : Joseph Zarka

14:00 - 14:25

Reliability and integrity analysis of creep rupture dataset extrapolation methods for 316H austenitic stainless steel

Xiaotong Ma[a], Chenwei Zhang[a], Senyu Lu[a], Xuehua He[c], Lijia Luo[ab], Shiyi Bao[abde]

[a]*College of Mechanical Engineering, Zhejiang University of Technology, Hangzhou, China*
[b]*Engineering Research Center of Process Equipment and Re-manufacturing of Ministry of Education, Zhejiang University of Technology, Hangzhou 310023, China*
[c]*College of Materials Science and Engineering, Zhejiang University of Technology, Huzhou, China;*
[d]*Key Laboratory for Green Pharmaceutical Technologies and Related Equipment of Ministry of Education, Zhejiang University of Technology, Huzhou, China*
[e]*Key Laboratory of Pharmaceutical Engineering of Zhejiang Province, Zhejiang University of Technology, Huzhou, China*

14:25 - 14:50	**Thermal induced crack observed on the Ni-Mn-Ga single crystal SMA** Shuaichen Guo, Ziad Moumni, Yongjun He *ENSTA- PARIS, France*
14:50 - 15:15	**Comparison of Different Auxetic Enhacement Layers for Shunted Piezoelectric Control** Xiaotong Ma, Chenwei Zhang, Senyu Lu, Xuehua He, Lijia Luo, Shiyi Bao *[a]College of Mechanical Engineering, Zhejiang University of Technology, Hangzhou, China* *[b]Engineering Research Center of Process Equipment and Re-manufacturing of Ministry of Education, Zhejiang University of Technology, Hangzhou, China;* *[c]College of Materials Science and Engineering, Zhejiang University of Technology, Huzhou, China;* *[d]Key Laboratory for Green Pharmaceutical Technologies and Related Equipment of Ministry of Education, Zhejiang University of Technology, Huzhou, China;* *[e]Key Laboratory of Pharmaceutical Engineering of Zhejiang Province, Zhejiang University of Technology, Huzhou, China*
15:15 - 15:40	***Effect of printing temperature on the microstructure of magnetic composites manufactured using filament fusion technique*** Meriem Bouchetara[ac], Alessia Melelli[b], Timm Weitkamp[b], Ahmed Koubaa[c], Sofiane Belhabib[d], Mustapha Nouri[e], Mahfoud Tahlaiti[e], Sofiane Guessasma[a] *[(a)] INRAE, Research Unit BIA UR1268, Rue Geraudiere, F-Nantes, France* *[(b)]Synchrotron SOLEIL, Saint-Aubin F-, France* *[(c)] UQAT Université, IRF, Campus de Rouyn-Noranda, QC J9X 5E4, Canada* *[(d)] Department of Mechanical Engineering, Nantes Université, IUT, France* *[(e)] ICAM, School of Engineering Nantes, GeM, CNRS UMR 6183, Research Institute in Civil Engineering and Mechanics, Centrale Nantes, France*

15:40 -16:10	Coffee Break

Session G : 21.1.05 - St Martin Access 21, 1st Floor, **Room 5**

Chairman : GUO BaoHua

16:10 - 16:35	**Analysis of Driver Fatigue Characteristics in Intelligent Regulatory Interactive Environment** Xianghong Li *Henan Polytechnic University, China*
16:35 - 17:00	**Optimization of Lattice Structures for Thermal Management in Solid-State Hydrogen Storage** Nadhir Lebaal [1, a)] , Alaeddine Zereg [1, b)] and Djafar Chabane [2, c)] *[1]ICB-COMM, University of Technology Belfort-Montbéliard, 90010 Belfort, France* *[2]UTBM, FEMTO-ST Institute, FCLAB, CNRS, Belfort, France.*
17:00 – 17:25	**Higher-order HDL: Applied to MLP neural network hardware implementation** GARCIA Samuel and ZHANG Ming-Jun *CNAM/CEDRIC, 292 rue Saint Matin, 75003 Paris, France*

THE ONLINE PRESENTATION ARE BASED ON PARIS (FRANCE TIME)

ONLINE Session G : 21.1.05 - St Martin Access 21, 1st Floor, **Room 5**

Chairman : David BASSIR

16:10 - 16:35	**Gas sensor Modeling from Simple Equation to Electronic Nose, Enose challenges** Ata Jahangir Moshayedi *School of Information Engineering, Jiangxi University of Science and Technology, China*
16:35 - 17:00	**Integrating Inverse Problems, Optimization Algorithms, and Machine Learning for Advanced Computational Solutions** Muhammad Sulaiman *Department of Mathematics, Abdul Wali Khan University, Mardan, Pakistan*
17:00 – 17:25	**Modelling of Fracture Mechanics SMA's** Gunay Anlas *Bogazici University, Mechanical Engineering Department, Turkey*
17:25 – 17:45	**Determination of Optimal Machining Parameters In The Machining Of Rene 41 Nickel Based Super Alloy Using The Taguchi Method** Abdullah ALTIN And Muhammed Cihat ALTIN *Yuzuncu Yil University, Turkey*

19:30 -21:30	**GALA DINNER**

FRIDAY MORNING, OCTOBER 18

THE ONLINE PRESENTATION ARE BASED ON PARIS (FRANCE TIME)

	ONLINE Session L : 21.1.03 St Martin Access 21, 1st Floor, **Room 7** Chairman : Jüri Majak
9:00 - 9:25	**Estimating of energy consumption of electric vehicles under different road characteristics: a case study for Nanjing, China** Bingmei Jia *Southwest Jiaotong University, China*
9:25 - 9:50	**Cooperative Lane-Changing Decision Model for Automated Vehicles in On-Ramp Merging Area Based on Physics-informed Reinforcement Learning** Qianqian Pang *Southeast University, China*
9:50 - 10:15	**The Principle of Virtual Energy for Predicting the Failure Strength of Material Structures** Biao Wang *Dongguan University of Technology, China*
	ONLINE Session M : 21.1.09 St Martin Access 21, 1st Floor, **Room 9** Chairman : Prof. Abel Cherouat

9:00 - 9:25	**Development of Clump-on Sonar Flow Meter Based on Frozen Turbulence Hypothesis** Afrasyab KHANN *Dongguan University of Technology (DGUT), Dongguan, Guangdong Province, China*
9:25 - 9:50	**Quantitative estimation for flood loss induced by storm surge for a coastal urban city** Yan Li*, David Bassir[ab], Gongfa Chen[c] **School of Civil and Transportation Engineering, Guangdong University of Technology, Guangzhou, China* *[a]IRAMAT, UMR-7065, Université Technologique de Belfort-Montbéliard, France.* *[b]Smart Structural Health Monitoring and Control Lab (SSHMC) Lab, DGUT-Cnam Institute, Dongguan University of Technology, China* *[c]School of Civil and Transportation Engineering, Guangdong University of Technology, China.*
9:50 - 10:15	**Multi-scale variable stiffness design optimization of fiber-reinforced composite material to minimize structural compliance for with multiple points shape preserving constraint** Zunyi Duan *School of Mechanics, Civil Engineering & Architecture, Northwestern Polytechnical University, China*
10:15 -10:35	Coffee Break

THE ONLINE PRESENTATION ARE BASED ON PARIS (FRANCE TIME)

	ONLINE Session N : 21.1.07- St Martin Access 21, 1st Floor, **Room 7** Chairman : Sofiane GUESSASMA
10:35 - 11:00	**Multi field coupled seepage simulation of drainage pavement based on three-dimensional heterogeneous microscopic pore structure model** Hualong Jing *Central South University, China*
11:00 - 11:25	**Scalability Enhancement in Large-Scale Structural Dynamics Optimization through the Integration of On-the-fly Dual Reduction Models** Manyu Xiao *Xi'an Key Laboratory of Scientific Computation and Applied Statistics, Northwestern Polytechnical University, China*
11:25 – 11:50	**Reconstruction and numerical experiment of jointed rock model based on CT scanning and photogrammetry technology** Yingxian Lang *Dalian University of Technology, China*
	ONLINE Session O : Session A : 21.1.09- St Martin Access 21, 1st Floor, **Room 9** Chairman : Prof. Ziad MOUMNI

10:35 - 11:00	**Refined prediction of urban land use change based on integration of improved CA and random forest algorithms** Yishun Yuan, Qianqian Zhou*, Xin Yan, Shuya He, Xinyi Xu *School of Civil and Transportation Engineering, Guangdong University of Technology, Guangzhou, China*
11:00 - 11:25	**Ship Heading Controller Based on Improved ESO and Feedback Linearization Sliding Mode Control** Weifan Gu *Henan Polytechnic University, China*
11:25 – 11:50	**Modeling and Simulation in Biomathematics: Towards an Ultimate Understanding of Biological Systems** Zakia Hammouch *University Moulay Ismail, Morocco*

THE ONLINE PRESENTATION ARE BASED ON PARIS (FRANCE TIME)

12:20 - 14:00	**Lunch & end of parallel Sessions**

SATURDAY MORNING, OCTOBER 19

09:30 – 11:30	**CITY VISIT (Must register in advanced the first day)**

THE ONLINE PRESENTATION ARE BASED ON PARIS (FRANCE TIME)