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

www.mdoa2024.org

## PROGRAM

### WEDNESDAY, MORNING, OCTOBER 16

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

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| **12:20 - 14:30** | LUNCH |

### WEDNESDAY, AFTERNOON, OCTOBER 16

■ **PHOTO GROUP ( 14:15-14:25)**

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| | **Session A :** 21.1.05 St Martin Access 21, 1st Floor, **Room 5**<br>Chairman : Piotr Breitkopf |
| **14:30 - 14:55** | **HUMAN-Robot interaction: Fuzzy AHP and TOPSIS approach**<br>Jüri Majak, Olga Dunajeva, Oleg Shvets, Kadri Ling, Martins Sarkans, Tõnis Raamets<br>*Tallinn University of Technology, Estonia* |
| **14:55 - 15:20** | **Optimization of bolted assemblies: influence of the tightening mode on the design and operating performance**<br>Jean Michel Monville & Joseph Zarka<br>*MZ Conseils, France* |
| **15:20 - 15:45** | **Strategy Comparison of Cracks Detection on Concrete Using Yolov8**<br>Haochen Chang[a], David Bassir[a,B], Mingjun Zhang[bc], Gongfa Chen[d],<br>*[a] IRAMAT, UMR-7065, Université Technologique de Belfort-Montbéliard, France.*<br>*[b] Smart Structural Health Monitoring and Control Lab (SSHMC) Lab, DGUT-Cnam Institute, Dongguan University of Technology, China*<br>*[c] CNAM/CEDRIC, 292 rue Saint Matin, 75003 Paris, France*<br>*[d] School of Civil and Transportation Engineering, Guangdong University of Technology, China.* |
| **15:45 - 16:10** | **Study on Conventional Failure Criteria Optimization for Rock Based on Gauss-Newton Method**<br>Zhezhe Zhang<br>*Henan Polytechnic University, China* |
| | **Session B :** 21.1.07- St Martin Access 21, 1st Floor, **Room 7**<br>Chairman : Jean Michel MONVILLE |
| **14:30 - 14:55** | **Simulation study on driving stability of highways under crosswind environment and design of warning system**<br>GUO Baohua<br>*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**<br>Sofiane Guessasma[1], Nicolas Stephant[2], Sylvie Durand[2], and Sofiane Belhabib[3]<br>*[1] INRAE, Research Unit BIA UR1268, Rue Geraudiere, F-Nantes, France*<br>[2]University of Nantes, France<br>*[3]Department of Mechanical Engineering, Nantes Université, IUT, France* |
| **15:20 - 15:45** | **Local fatigue analysis of shape memory alloys based on interface evolution**<br>Bingqian Wang, Yongjun He, Ziad Moumni<br>*ENSTA, Paris, France* |
| **15:45 - 16:10** | **Multiphysics coupled modeling of the LPBF process for surface morphology optimization**<br>Xingyue Zhai<br>*Northwetern Polytechnical University, China* |
| **16:10 -16:30** | COFFEE BREAK |

| | **Session C :** 21.1.05 - St Martin Access 21, 1st Floor, **Room 5**<br>Chairman : Abdelkhalak EL HAMI |
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| **16:30 - 16:55** | **Numerical Simulation of Plasmonic and Lattice Resonances in Flexible Metasurfaces for Enhanced Mechano-Optical Properties**<br>Wei Tao*, Thomas Maurer[1], Monika Fleischer[2]<br>**Smart Structural Health Monitoring and Control Lab (SSHMC) Lab, DGUT-Cnam Institute, Dongguan University of Technology, China*<br>*[1]Laboratory Light, Nanomaterials and Nanotechnologies—L2n, University of Technology of Troyes and CNRS UMR 7076, Troyes, France*<br>*[2]Institute for Applied Physics and Center LISA+, Eberhard Karls University Tübingen, 72076 Tübingen, Germany* |
| **16:55 - 17:20** | **Numerical estimation of the mechanical behavior of nanocomposite materials.**<br>Ludovic CAUVIN<br>*Université de Technologie de Compiègne, France* |
| **17:20 – 17:45** | **Lightweight design of solar-powered UAV wings with an adaptive modelling of joints**<br>*Ruitong Zhang*<br>*Northewestern Polytechnical University* |

| | **Session D : 21.1.07- St Martin Access 21, 1st Floor, Room 7**<br>**Chairman : Joseph ZARKA** |
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| **16:30 - 16:55** | **Comparison of Different Auxetic Enhacement Layers for Shunted Piezoelectric Control**<br>Maria-Styliani Daraki[1] , Aikaterini-Maria Michali[1] , Konstantinos Marakakis[1] , Georgia A. Foutsitzi[2] , Georgios E. Stavroulakis[1] , Jean-François Deü[3] and Roger Ohayon[3]<br>*[1]Department of Production Engineering and Management, Technical University of Crete, Chania, Greece*<br>*[2]Department of Informatics & Telecommunications, University of Ioannina, Greece*<br>*[3]Structural Mechanics and Coupled Systems Laboratory, Conservatoire National des Arts et Métiers, France* |
| **16:55 - 17:20** | **Modification of creep rupture life prediction method for 316H austenitic stainless steel**<br>Xiaotong Ma[a], Chenwei Zhang[a], Senyu Lu[a], Xuehua He[c], Lijia Luo[ab], Shiyi Bao[abde]<br>*[a]College of Mechanical Engineering, Zhejiang University of Technology, Hangzhou, China*<br>*[b]Engineering Research Center of Process Equipment and Re-manufacturing of Ministry of Education, Zhejiang University of Technology, Hangzhou, China*<br>*[c]College of Materials Science and Engineering, Zhejiang University of Technology, Huzhou, China*<br>*[d]Key Laboratory for Green Pharmaceutical Technologies and Related Equipment of Ministry of Education, Zhejiang University of Technology, Huzhou, China*<br>*[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**<br>Abel Cherouat[1], Thierry Barriere[2]<br>*[1]Université de Technologie de Troyes UTT, France*<br>*[2]UFC, France* |

## THURSDAY MORNING, OCTOBER 17

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

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| 12:20 - 14:00 | **LUNCH** |

## THURSDAY AFTERNOON, OCTOBER 17

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

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| 14:00 - 14:25 | **Enhanced Crack Detection in Composite Plates: Integrating Haar Wavelet Transform with Convolutional**<br>Marmar Mehrparvar, Kristo Karjust<br>*Tallinn University of Technology, Estonia* |
| 14:25 - 14:50 | **Topology optimization of lattice structures for target band gaps and optimum volume fraction**<br>F. Gómez-Silva*, R. Zaera, R. Ortigosa and J. Martínez-Frutos<br>**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**<br>Alaeddine Zereg[1, a)] , Mohamed Taher Bouzaher[2, b)] , David Bassir[3,4, c)] and NadhirLebaal[1, d)]<br>*[1] ICB-COMM, University of Technology Belfort-Montbéliard, 90010 Belfort, France*<br>*[2] Scientific and Technical Research Centre for Arid Areas (CRSTRA), Biskra, Algeria*<br>*[4]IRAMAT, UMR-7065, Université Technologique de Belfort-Montbéliard, France.*<br>*[3]Smart Structural Health Monitoring and Control Lab (SSHMC) Lab, DGUT-Cnam Institute, Dongguan University of Technology, China* |
| 15:15 - 15:40 | **Topology Optimization of Biomedical Wrist Orthosis Using Tough Photopolymer Resin**<br>David Bassir[12], Sofiane Guessasma[3], Nadhir Lebaal[4,] Gauthier Brunel[1],Axel Choquet[1], Francois Gleyzon[1], Haochen Chang[1]<br>*[1]IRAMAT, UMR-7065, Université Technologique de Belfort-Montbéliard, France.*<br>*[2] Smart Structural Health Monitoring and Control Lab (SSHMC) Lab, DGUT-Cnam Institute, Dongguan University of Technology, China*<br>*[3]INRA, BIA, rue de la geraudiere, 44316 Nantes, France*<br>*[4]ICB-COMM, Universite de Technologie de Belfort-Montbeliard, France* |

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

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| 14:00 - 14:25 | **Reliability and integrity analysis of creep rupture dataset extrapolation methods for 316H austenitic stainless steel**<br>Xiaotong Ma[a], Chenwei Zhang[a], Senyu Lu[a], Xuehua He[c], Lijia Luo[ab], Shiyi Bao[abde]<br>*[a]College of Mechanical Engineering, Zhejiang University of Technology, Hangzhou, China*<br>*[b]Engineering Research Center of Process Equipment and Re-manufacturing of Ministry of Education, Zhejiang University of Technology, Hangzhou 310023, China*<br>*[c]College of Materials Science and Engineering, Zhejiang University of Technology, Huzhou, China;*<br>*[d]Key Laboratory for Green Pharmaceutical Technologies and Related Equipment of Ministry of Education, Zhejiang University of Technology, Huzhou, China*<br>*[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**<br>Shuaichen Guo, Ziad Moumni, Yongjun He<br>*ENSTA- PARIS, France* |
| 14:50 - 15:15 | **Numerical Analysis of Fragment Flight Dynamics Using Haar Wavelet Method**<br>Lenart Kivistik, Martin Eerme, Marmar Mehrparvar, Maarjus Kirs<br>*Tallinn University of Technology, Estonia* |
| 15:15 - 15:40 | ***Effect of printing temperature on the microstructure of magnetic composites manufactured using filament fusion technique***<br>Meriem Bouchetara[ac], Alessia Melelli[b], Timm Weitkamp[b], Ahmed Koubaa[c], Sofiane Belhabib[d], Mustapha Nouri[e], Mahfoud Tahlaiti[e], Sofiane Guessasma[a]<br>*[(a)] INRAE, Research Unit BIA UR1268, Rue Geraudiere, F-Nantes, France*<br>*[(b)]Synchrotron SOLEIL, Saint-Aubin F-, France*<br>*[(c)] UQAT Université, IRF, Campus de Rouyn-Noranda, QC J9X 5E4, Canada*<br>*[(d)] Department of Mechanical Engineering, Nantes Université, IUT, France*<br>*[(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**<br>Chairman : GUO BaoHua |
| 16:10 - 16:35 | **Analysis of Driver Fatigue Characteristics in Intelligent Regulatory Interactive Environment**<br>Xianghong Li<br>*Henan Polytechnic University, China* |
| 16:35 - 17:00 | **Optimization of Lattice Structures for Thermal Management in Solid-State Hydrogen Storage**<br>Nadhir Lebaal [1, a)] , Alaeddine Zereg [1, b)] and Djafar Chabane [2, c)]<br>*[1]ICB-COMM, University of Technology Belfort-Montbéliard, 90010 Belfort, France*<br>*[2]UTBM, FEMTO-ST Institute, FCLAB, CNRS, Belfort, France.* |
| 17:00 – 17:25 | **Ship Heading Controller Based on Improved ESO and Feedback Linearization Sliding Mode Control**<br>Weifan Gu |

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| | *Henan Polytechnic University, China* |
| **17:25 - 17:50** | **Higher-order HDL: Applied to MLP neural network hardware implementation**<br>GARCIA Samuel and ZHANG Mingjun<br>*CNAM/CEDRIC, 292 rue Saint Matin, 75003 Paris, France* |

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| | **ONLINE- Session H :** 21.1.05 - St Martin Access 21, 1st Floor, **Room 5**<br>Chairman : David BASSIR |
| **16:10 - 16:35** | **Gas sensor Modeling from Simple Equation to Electronic Nose, Enose challenges**<br>Ata Jahangir Moshayedi<br>*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**<br>Muhammad Sulaiman<br>*Department of Mathematics, Abdul Wali Khan University, Mardan, Pakistan* |
| **17:00 - 17:25** | **Determination of Optimal Machining Parameters In The Machining Of Rene 41 Nickel Based Super Alloy Using The Taguchi Method**<br>Abdullah ALTIN And Muhammed Cihat ALTIN<br>*Yuzuncu Yil University, Turkey* |
| **17:25 - 17:50** | **Case studies of implementing embedded control system framework on Autonomous vehicle**<br>Heiko Pikner, Kristo Karjust, Martin Eerme<br>*Tallinn University of Technology, Estonia* |

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

## FRIDAY MORNING, OCTOBER 18

***THE ONLINE PRESENTATION ARE BASED ON PARIS (FRANCE TIME)***

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| | **ONLINE-Session I:** 21.1.07 St Martin Access 21, 1st Floor, **Room 7**<br>Chairman : Jüri Majak |
| **9:00 - 9:25** | **Estimating of energy consumption of electric vehicles under different road characteristics: a case study for Nanjing, China**<br>Bingmei Jia<br>*Southwest Jiaotong University, China* |

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| 9:25 - 9:50 | **Cooperative Lane-Changing Decision Model for Automated Vehicles in On-Ramp Merging Area Based on Physics-informed Reinforcement Learning**<br>Qianqian Pang<br>*Southeast University, China* |
| 9:50 - 10:15 | **The Principle of Virtual Energy for Predicting the Failure Strength of Material Structures**<br>Biao Wang<br>*Dongguan University of Technology, China* |
| | **ONLINE- Session J :** 21.1.09 St Martin Access 21, 1st Floor, **Room 9**<br>Chairman : Prof. Abel Cherouat |
| 9:00 - 9:25 | **Development of Clump-on Sonar Flow Meter Based on Frozen Turbulence Hypothesis**<br>Afrasyab KHANN<br>*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**<br>Yan Li*, David Bassir[ab], Gongfa Chen[c]<br>**School of Civil and Transportation Engineering, Guangdong University of Technology, Guangzhou, China*<br>*[a]IRAMAT, UMR-7065, Université Technologique de Belfort-Montbéliard, France.*<br>*[b]Smart Structural Health Monitoring and Control Lab (SSHMC) Lab, DGUT-Cnam Institute, Dongguan University of Technology, China*<br>*[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**<br>Zunyi Duan<br>*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)***

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| | **ONLINE-Session K :** 21.1.07- St Martin Access 21, 1st Floor, **Room 7**<br>Chairman : Sofiane GUESSASMA |
| 10:35 - 11:00 | **Multi field coupled seepage simulation of drainage pavement based on three-dimensional heterogeneous microscopic pore structure model**<br>Hualong Jing<br>*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** |

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| | Manyu Xiao<br>*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**<br>Yingxian Lang<br>*Dalian University of Technology, China* |
| **11:50 - 12:15** | **Overview of Non-Invasive Blood Glucose Monitoring Techniques: Focus on Optical Methods**<br>Kholoud Fdil[1,2,3], Safae Elhir[2], Ikram Debbarh[2], Hicham Medromi[1,3]<br>*[1]Engineering National High School of Electricity and Mechanic (ENSEM) Casablanca Morocco*<br>*[2]Graduate School of Biomedical Engineering and Health Techniques(SUPTECH-SANTE) Mohammedia Morocco*<br>*[3]Research Foundation for Development and Innovation in Science and Engineering (FRDISI), Morocco* |
| | **ONLINE-Session L :** 21.1.09- St Martin Access 21, 1st Floor, **Room 9**<br>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**<br>Yishun Yuan, Qianqian Zhou*, Xin Yan, Shuya He, Xinyi Xu<br>*School of Civil and Transportation Engineering, Guangdong University of Technology, Guangzhou, China* |
| **11:00 - 11:25** | **Modeling and Simulation in Biomathematics: Towards an Ultimate Understanding of Biological Systems**<br>Zakia Hammouch<br>*University Moulay Ismail, Morocco* |
| **11:25 - 11:50** | **Fracture Mechanics of Shape Memory Alloys**<br>Gunay Anlas<br>*Bogazici University, Mechanical Engineering Department, Turkey* |
| **11:50 - 12:15** | **Mathematical Modeling and Analysis of Functionally Graded Graphene Reinforced Porous Panels**<br>Mohammad Talha<br>*IIT Mandi, India* |

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| **12:20 - 14:00** | **LUNCH & END OF PARALLEL SESSIONS** |

## SATURDAY MORNING, OCTOBER 19

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