

# SCIENTIFIC PROGRAM

## ICAV'2020

### The Third International Conference on Acoustics and Vibration

#### Online Conference

15-16 March 2021, Sfax – Tunisia



#### Conference Chairs



ABBES Mohamed Slim....  
ENIS Sfax, TN



TAKTAK MOHAMED....  
FSS Sfax, TN

#### Honorays Chairs



FAKHFAKH TAHER  
ENIS Sfax, Tunisia



KARRA CHAFIK  
IPEIS Sfax, Tunisia

#### Organizing Committee Chairs



BENSOUF M.  
ENIS Sfax, TN



FEKI N.  
ISSAT Sousse, TN



## Monday 15 / 03 / 2021

9 h – 9 h 15	<b>Opening session</b>	
	Pr. Mohamed Slim ABBES ICAV2020 Conference General Chair ENIS-Sfax University <a href="mailto:Slim.abbes@enis.tn">Slim.abbes@enis.tn</a>	Pr. Mohamed TAKTAK ICAV2020 Conference General Chair FSS- Sfax University <a href="mailto:mohamed.taktak@fss.rnu.tn">mohamed.taktak@fss.rnu.tn</a>

9 h 15 – 9 h 45	<b>Plenary Session 1 : Professor Pierre-Olivier MATTEI</b> Title : Nonlinear Energy Pumping in Vibroacoustics using multistable absorber <i>Chair : Pr Mohamed Slim ABBES</i>
9 h 45 – 10 h 15	<b>Plenary Session 2 : Professor Abderrahim EL MAHI</b> Title: Use of piezoelectric as acoustic emission sensor for in situ monitoring of mechanical behaviour of composite structures <i>Chair : Pr Slim BOUAZIZ</i>
10 h 15 – 10 h 45	<b>Plenary Session3 : Jean-Yves CHOLEY</b> Title : Modeling consistency assessment to improve collaborative design of mechatronic systems <i>Chair : Pr Moez ABDENNADHER</i>
10 h 45 – 11 h 00	<b>Break</b>

	<b>Room 1.</b> <i>Chair Pr. Ali AKROUT</i>	<b>Room 2.</b> <i>Chair Pr. Anas BOUGACHA</i>
11h – 11h15	<b>ID 16. A Multiple- Grid technique–based Finite Element solution of free-surface flows in a trapezoidal open channel</b> <i>Souad Mnassri, Ali Triki</i>	<b>ID 39.</b> Trapped modes in presence of mean flow <i>Congcong MA, Mabrouk Ben Tahar</i>
11h15 – 11h30	<b>ID 26.</b> Nonlinear wind-induced response analysis of substation down-conductor system <i>Guoqing Yu, Zhitao Yan, Xinpeng Liu</i>	<b>ID 22.</b> The Efficiency of the Rayleigh-Ritz method applied to In-Plane Vibrations of Circular Arches Elastically Restrained at the Two Ends and Supporting Point Masses. <i>Ahmed Babahammou, Rhali Benamar</i>
11h30 – 11h45	<b>ID 41.</b> On the unidirectional free-surface flow solution in rectangular open-channel <i>SouadMnassri, Ali Triki</i>	<b>ID 96.</b> Regeneration process of short glass fibre reinforced polyamide for the production of electrical parts <i>Ichrak Ben Amor, MounaBaklouti, Olga Klinkova, ImadTawfiq, RiadhElleuch</i>
11h45 – 12h00	<b>ID 71.</b> Analytical model and numerical method for the dynamic behavior of a plate subjected to a moving load <i>Sbayti M., Hamrouni K., Aloui A.</i>	<b>ID 44.</b> Large strokes of a piezocomposite energy harvester with interdigitated electrodes accounting for geometric and material nonlinearities <i>Ahmed JEMAI, Sourour BAROUDI, Fehmi NAJAR</i>
12h00 – 12h15	<b>ID 85.</b> Mechanical properties and damage mechanisms of nanocomposites reinforced by SiO <sub>2</sub> , TiO <sub>2</sub> and Al <sub>2</sub> O <sub>3</sub> <i>Ahlem Bendaoued, Mouna Messaoud, Rached Salhi</i>	<b>ID 70.</b> Vibration of a corrugated slab made of GFRP rebar, concrete and composite layer <i>Sofiene Helaili, Moez Chafra</i>
12h15 – 12h30	<b>ID 98.</b> Combined Effect of Roughness Anisotropy and Roughness Parameters on the Friction Be-havior under Boundary Lubrication <i>F. Elwasli, S. Mzal<sup>1</sup>, F. Zemzemi, S. Mezlini</i>	<b>ID 97.</b> Vibration and stability of mechanical systems equipped with impact absorbers <i>Kaouther Chehaibi, Charfeddine Mrad, Rachid Nasri</i>
12h30 – 12h45	<b>ID 7.</b> Gearbox fault identification under non-Gaussian noise and time-varying operating conditions <i>Stephan Schmidt, Fakher Chaari, Radoslaw Zimroz, P. Stephan Heyns, M. Haddar</i>	<b>ID 34.</b> Passive control of Tensegrity domes using Tuned Mass Dampers, a reliability approach <i>E. Mrabet, M. H. El Ouni, N. Ben Kahla</i>
12h45 – 13h	<b>ID 2.</b> Sensitivity study of ritz vectors on critical modal characteristics of highway bridges <i>Mouloud Ouanani ,Boualem Tiliouine, Sanjak Khaled</i>	<b>ID 104.</b> Effect of Zinc Oxide additive on structural and mechanical properties of natural fluorapatite <i>S. Djouallah, H. Belhouchet, A. Guidara, K Chaari, J. Bouaziz</i>

13 h – 14 h 30	<b>Break</b>
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14h30 – 15h	<b>Plenary Session 4 : Professor Abdelkhalek EL HAMI</b> Title: Reliability and optimization of embedded mechatronic systems <i>Chair : Pr Lassaad WALHA</i>
15h -15h30	<b>Plenary Session 5 : Professor Weidong ZHU</b> Title: Dynamics of Continuous Systems: From Time-Varying, Nonlinear, and Flexible Multibody Systems to Phononic Structures <i>Chair : Pr Tahar FAKHFAKH</i>

	<b>Room 1.</b> <i>Chair Pr. Mohamed BENSOUF</i>	<b>Room 2.</b> <i>Chair Pr. Moez BEYAOU</i>
15h30 – 15h45	<b>ID 72.</b> Sensitivity of the bone mechanical behaviour according to the porosity variation <i>Tesnim Kraiem, Abdelwahed Barkaoui, Tarek Merzouki, Moez Chafra</i>	<b>ID 42.</b> On the numerical solution of the rapidly varied regime in open-channel flows. <i>Souad Mnassri, Ali Triki</i>
15h45 – 16h	<b>ID 77.</b> Obsolescence propagation in the product architecture and in the supply chain <i>Amel Soltan, Maher Barkallah, Sid-Ali Addouche, Marc Zolghadri , M. Haddar</i>	<b>ID 45.</b> Transient pressurized-pipe flow due to pump failure <i>Ali Triki</i>
16h – 16h15	<b>ID 23.</b> A reduced axisymmetric convected boundary element method formulation for acoustic problems inside ducts with a uniform subsonic flow <i>Mohamed Beldi, Lamia Zarrouk , Rached Nciri , Mohamed Haddar</i>	<b>ID 81.</b> Dynamic behavior of unbalanced shaft during run up regime <i>Ahmed Hammami, Atef Hmida, Fakher Chaari, Mohamed Haddar</i>
16h15 – 16h30	<b>ID 19.</b> Dynamic modeling and readjustment of a ball bearing test-rig <i>Mohamed habibFarhat, Xavier Chimentin, Fabrice Bolaers, Fakher Chaari, Mohamed Haddar</i>	<b>ID 75.</b> Investigation of the stress field and the dynamic stress intensity factors of a cracked gear-shaft <i>Boughazala. M, Hamrouni. K., Aloui. A., Haddar. M.</i>
16h30 – 16h45	<b>ID 110.</b> Experiments and Computations of a Vibrating Beam Coupled to a Granular Chain Impact Damper <i>Chaima Bousellaa, Vincent Debut, José Antunes, Tahar Fakhfakh, M. Haddar</i>	<b>ID 66.</b> Consideration of uncertainty for the robust design of a complex system: application in the case of an horizontal wind turbine <i>M.HadjKacem, H. Trabelsi, A. Guizani, A. El Hami, L. Walha, M. Haddar</i>
16h45 – 17h	<b>ID 73.</b> Reliability based design optimization of an offshore wind turbine considering soil-structure interaction <i>Kamel A., Ben Jdidia M., Dammak K., El Hami A., Hammami L., Haddar M.</i>	<b>ID 65.</b> Multi-agent approach for collaborative design of an electric vehicle <i>H. Trabelsi , A. Guizani, G. Hamza, M. Hammadi, M. Barkallah , M. Haddar</i>

## Tuesday 16 / 03 / 2021

8h30 – 9h	<b>Plenary Session 6 : Philippus Stephanus HEYNS</b> <b>Title :</b> Fresh thinking on blade tip timing in turbo machine diagnosis and prognosis? <i>Chair : Pr Fakhher CHAARI</i>
9h – 9h30	<b>Plenary Session 7 : Mabrouk BENTAHAR</b> <b>Title :</b> A review of the linear acoustic equations for application in inhomogeneous medium <i>Chair : Pr Mohamed TAKTAK</i>

	<b>Room 1.</b> <i>Chair Pr. Riadh CHAARI</i>	<b>Room 2.</b> <i>Chair Pr. Taissir HENTATI</i>
9h30 – 9h45	<b>ID 107.</b> Modal Analysis of Engine Crankshaft <i>Atef Hmida, Ahmed Hammami, Rachid Nasri</i>	<b>ID 58.</b> Dynamic response of an epicyclic bevel gear with uncertainties <i>Wassim Lafi, Fathi Djemal, Dhouha Tounsi, Ali Akrou, Lassaad Walha, M. Haddar</i>
9h45 – 10h	<b>ID 46.</b> Continuous elements method applied to acoustic waves <i>M.A. Khadimallah, Imene Harbaouia, Lamjed Hadjtaieb.</i>	<b>ID 48.</b> LQ control of a shaft supported by a magnetic bearing system <i>Abdelileh Mabrouk, Olfa Ksentini, Nabih Feki, Mohamed Slim Abbes, M. Haddar</i>
10h – 10h15	<b>ID 47.</b> Innovative In-plane converter design for a Capacitive Energy Harvester <i>M.A. Ben Hassana, H. Samaali, F. Najjar, Hassen M. Ouakad</i>	<b>ID 113.</b> Experimental and numerical analysis of a dental surgery tool tip shaping process <i>Majdi Yangui, Wafa Khairallah, Abderrahim Baccar</i>
10h15 – 10h30	<b>ID 94.</b> Influence of overheating on brass forging operation <i>Souhir Hammami, Riadh Elleuch</i>	<b>ID 84.</b> The ability of Phase-Field Method to predict the experimental dynamic fracture in brittle material <i>Yosra Kriaa, Amine Ammar, Bassem Zouari</i>
10h30 – 10h45	<b>ID 60.</b> Numerical investigation of pitch angle effect on the performance of three straight camber blade <i>Fathi Hamdi, Khaled Souaissa, Mouldi Chrigui</i>	<b>ID 61.</b> An anisotropic model with non-associated flow rule to predict HCP sheet metal ductility limit <i>Mohamed Yassine Jedidi, Anas Bouguecha, Mohamed Taoufik Khabou, M.Haddar</i>
10h45 – 11h	<b>ID 78.</b> Variable Amplitude Loading Effect On The Crack Tip In 2024-T3 Aluminum Alloy <i>A. Remadi, A. Bahloul, Ch. Bouraoui</i>	<b>ID 93.</b> Experiments and computations of a vibrating beam coupled to a granular chain impact damper <i>Chaima Boussellaa, Vincent Debut, Jose Antunes, Tahar Fakhfakh, Mohamed Haddar</i>
11h – 11h15	<b>ID 69.</b> Vibration performance of a lightweight composite footbridge <i>Sofiene Helaili, Moez Chafra</i>	<b>ID 40.</b> Numerical estimation of the NES damping coefficient in both linear and non-linear domains <i>Islem Bouzid, Pierre-Olivier Mattei, Renaud Côt, Tahar Fakhfakh, Mohamed Haddar</i>
11h15 – 11h30	<b>ID 83.</b> Probabilistic fatigue life prediction through an ultrasonic non-destructive inspection <i>Chouikh Iheb, Bouraoui Chokri</i>	<b>ID 101.</b> Time and angular modeling of gearboxes driven by asynchronous motors under non-stationary operating conditions <i>Nabih Feki, Ahmed Hammami, Fakhher Chaari, Mohamed Slim Abbes, M. Haddar</i>
11h30 – 11h45	<b>ID 100.</b> Modal-based physical synthesis of the Arabic Oud using the Udwadia-Kalaba formulation <i>Leon Bucarechi Vincent Debut, Jose Antunes</i>	<b>ID 109.</b> Clearance effect in the simulation of bar shearing <i>Sonda Moakhar, Hamdi Hentati, M. Barkallah, Jamel Louati, M. Ben Amar, M. Haddar</i>
11h45 – 12h00	<b>ID 106.</b> Bayesian Network to obsolescence propagation analysis <i>Amel Soltan, Maher Barkallah, Marc Zolghadri, Sid-Ali Addouche, M. Haddar</i>	<b>ID 76.</b> New Levy's series for plate solutions with arbitrary boundary conditions <i>K. Khelifi, J. B. Casimir, A. Akrou, M. Haddar</i>

12 h – 14 h	<b>Break</b>
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	<b>Room 1.</b> <i>Chairs Pr. Maher BARKALLAH &amp; Hamdi HENTATI</i>	<b>Room 2.</b> <i>Chairs Hassen TRABELSI &amp; Fathi JMAL</i>
14h00 – 14h15	<b>ID 91.</b> The impact of gear tooth defect on the current signal of an asynchronous motor <i>S. Boudhraa, A. Hammami, A. F. D. Rinacon, F. Chaari, F. V. Rueda, M. Haddar</i>	<b>ID 115.</b> Numerical analysis of transient flow in a hydraulic tree network: Zarroug aqueduct network in Gafsa, Southern Tunisia <i>AYED Lazhar, Hafsi Zahreddine</i>
14h15 – 14h30	<b>ID 105.</b> A new dynamic model for worm drives <i>AlaEddin Chakroun, A. Hammami, Ana Magdalena De Juan de Luna, F. Chaari, Alfonso Fernandez Del Rincon, Fernando Viadero Rueda, M. Haddar</i>	<b>ID 63.</b> Static and cyclic fatigue loading of a Flax Fibre Reinforced Composites with an Interleaved Natural Viscoelastic Layer <i>Hajer Daoud, Abderrahim El Mahi, Jean-Luc Rebière, Mohamed Taktak, M. Haddar</i>
14h30 – 14h45	<b>ID 30.</b> Bending fatigue behaviour of a bio-based sandwich with conventional and auxetic honeycomb core <i>K. Essassi, J.L. Rebiere, A. El Mahi, M. Toure, M.A. Ben Souf, A. Bouguecha,</i>	<b>ID 51.</b> Damage detection in plate-like structure using the inverse simplified energy method <i>Ahmed Samet, M. A. Ben Souf, O. Bareille, T. Fakhfakh, M. Ichchou, M. Haddar</i>
14h45 – 15h	<b>ID 103.</b> Aerodynamic behaviour of 2D-airfoil in uniform motion <i>Marwa Walha, Ali Akrou, Mohamed Haddar, Olivier Boiron</i>	<b>ID 57.</b> Estimation of mechatronic systems defects <i>D. Ben Hassen, A. Mabrouk, O. Ksentini, M. Chaabane, N. Feki, M. S. Abbes</i>
15h – 15h15	<b>ID 35.</b> Dynamic analysis of a pumping station with coupling misalignment fault <i>Ahmed Ghorbel, Moez Abdennadher, Lassâad Walha, Mohamed Haddar</i>	<b>ID 108.</b> Shear-Normal Coupling Effects on Composite Shafts Dynamic Behaviour <i>Safa Ben Arab, Slim Bouaziz, Mohamed Haddar</i>
15h15 – 15h30	<b>ID 92.</b> Modified accelerated particle swarm optimization to solve structural damage detection problem <i>Hichem Hassine, Maher Barkallah, Jamel Louati, Mohamed Haddar</i>	<b>ID 53.</b> Effect of Mean Flow and Impedance variation on the Acoustic Performance of Cylindrical Ducts Discontinuities <i>Raja Dhief, Mohamed Taktak, Mabrouk Chaabane, Mohamed Haddar</i>

15h30 – 16h	<b>Break</b>
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	<b>Room 1.</b> <i>Chair Pr. Hamdi HENTATI</i>	<b>Room 2.</b> <i>Chairs Hassen TRABELSI &amp; Ahmed HAMMAMI</i>
16h – 16h15	<b>ID 87.</b> The interaction of different transmission system using the substructuring method <i>Marwa Bouslema, Taher Fakhfakh, Rachid Nasri, Mohamed Haddar</i>	<b>ID 31.</b> Thermoplastic Eilium Recycling: Mechanical behaviour and damage mechanisms analysis characterization by Acoustic Emission <i>Sami Allagui, A. El Mahi, Jean-Luc Rebière, M. Beyaoui, A. Bouguecha, M. Haddar</i>
16h15 – 16h30	<b>ID 67.</b> Analytical approach in the pre-design phase for vibration analysis of a flexible multibody system <i>Ghazoi Hamza, M. Barkallah, H. Trabelsi, A. Guizani, J. Louati, M. Haddar</i>	<b>ID 38.</b> Gear damage effect on mesh damping ratio using the wavelet transform <i>Nourhaine Yousfi, Bacem Zghal, Ali Akrou, Lassaad Walha, Mohamed Haddar</i>
16h30 – 16h45	<b>ID 49.</b> Dynamic interaction between transmission error and friction coefficients <i>Maroua Hammami, Olfa Ksentini, Nabih Feki, Mohamed Slim Abbes, M. Haddar</i>	<b>ID 55.</b> Modelling of an acoustic problem in high and medium frequency domain using enriched finite element <i>Ramzi Fridhi, Soufien Sahbi, Mohamed Taktak, Mohamed Haddar</i>
16h45 – 17h	<b>ID 116 -</b> Assessment of temperature history when abrasive milling of long fiber reinforced polymers <i>F. Guesmi, M. Farhani, A. Al-Zahrani, S. Ghazali, A. Mkaddem, A. Jarraya</i>	<b>ID 112.</b> The Singular Value Decomposition: A Tool for Denoising and Bearing Diagnostics <i>Oussama Graja, Ahmed Ghorbel, Fakhher Chaari, M. Haddar</i>
17h – 17h15	<b>ID 29.</b> An efficient Deterministic Design Optimization procedure for PCM-based Heat Sinks for mechatronic devices <i>B. Debich, A. Yaich, Abdelkhalak Elhami, Wajih Gafsi, L. Walha, M. Haddar</i>	<b>ID 54.</b> Evaluation of the acoustic performance of perforated multilayer absorber materials <i>Amine Makni, Marwa Kani, Mohamed Taktak, Mohamed Haddar</i>
17h15 – 17h30	<b>ID 59.</b> Identification of the motor torque using Blind Source Separation <i>M. M. Chaabane, D. Ben Hassen, M. S. Abbes, S. C. Baslamisli, F. Chaari</i>	<b>ID 62.</b> Interval computation for the design of wind turbine <i>A. Guizani, H. Trabelsi, G. Hamza, M. Barkallah, M. Hammadi, M. Haddar</i>
17h30 – 17h45		<b>ID 82.</b> Online Adaptive MFC Control for Nonlinear Active Half Car System <i>Maroua Haddar, Riadh Chaari, Caglar Baslamisli, Fakhher Chaari, Mohamed Haddar</i>