PROGRAMME

VBE2023

International Conference
on Vehicle Body Engineering
2-3 November 2023
Porto, Portugal

U.PORTO
FEUP FACULDADE DE ENGENHARIA
UNIVERSIDADE DO PORTO

PROGRAMME OF VBE2023

Author underlined → presenting author

*** Plenary lecture**

Thursday 2 November 2023	
8:40	***VBE2023 Opening* (Room B032)**
9:00*	**Wood or plywood for a sustainable transportation: Past example and present issues (VBE23_23)** B Castanié (INSA Toulouse, France)
	Session 1 – Material testing and simulation I (Chair: EAS Marques and LFM da Silva)
	Room B032
9:40	Characterization of the mode II critical energy release rate of poplar plywood **(VBE23_14)** H Hadiji (INSA Toulouse, France), J Serra, R Curti, B Castanié
10:00	Fracture energy of a polyurethane adhesive in vehicle body applications: investigating the interaction of strain rate, loading mode, and temperature **(VBE23_18)** M Ribas (University of Porto, Portugal), A Akhavan-Safar, RJC Carbas, EAS Marques, S Wenig, LFM da Silva
10:20	Numerical analysis of roll forming with anisotropic hardening model for advanced high-strength steels **(VBE23_15)** KC Jeong (Hanyang University, Republic of Korea), SB Jang, HJ Seo, KH Kim, JH Yoon
10:40-11:00	**COFFEE BREAK (Room under the Auditorium)**
	Session 2 – Structural joining methods (Chair: A Akhavan-Safar and X Han)
	Room B032
11:00	A novel hybrid joining technology for high-performance joints in vehicle structures **(VBE23_5)** MM Kasaei (INEGI, Portugal), A Haran-Nogueira, A Akhavan-Safar, RJC Carbas, EAS Marques, LFM da Silva
11:20	The influence of bent adherends on adhesively joints strength performance **(VBE23_7)** RCJ Carbas (INEGI, Portugal), VDC Pires, EAS Marques, LFM da Silva
11:40	Study of hybrid composite joints with thin-ply reinforced adherends **(VBE23_9)** F Ramezani (INEGI, Portugal), RJC Carbas, EAS Marques, LFM da Silva
12:00	Characterization of bio-based polyurethane adhesives in zero-thickness bonds **(VBE23_55)** Sh Jalali (INEGI, Portugal), CSP Borges, EAS Marques, RJC Carbas, LFM da Silva
12:20	Guidelines for designing modular connections for the maritime industry **(VBE23_32)** P Tsokanas (INEGI, Portugal), AQ Barbosa, RLL Pereira, JPF da Silva, RJC Carbas, EAS Marques, LFM da Silva
12:40	A survey of electromechanical impedance spectroscopy based structural monitoring of adhesively bonded structures **(VBE23_39)** AFG Tenreiro (INEGI, Portugal), AM Lopes, LFM da Silva
13:00-14:00	***LUNCH BREAK (Room under the Auditorium)***
14:00*	**Development of advanced design and testing procedures for structural bonded joints for use in high performance vehicle structures (VBE23_20)** EAS Marques (University of Porto, Portugal), CSP Borges, PDP Nunes, BD Simões, A Akhavan-Safar, RJC Carbas, LFM da Silva
	Session 3 – Road vehicle structural design (Chair: N Peixinho and S Hosseini)
	Room B032
14:40	Design and manufacturing challenges for high-strength steel application in automotive body parts **(VBE23_17)** N Peixinho (Universidade do Minho, Portugal), R Pereira, S Costa
15:00	Passive safety in agricultural tractors: rollover FE simulation **(VBE23_13)** M Cavallo, G Cordua, M Barbi, G Monacelli, G Belingardi, A Scattina (Politecnico di Torino, Italy)

15:20	Transfer learning for crash design **(VBE23_28)** G Colella (BMW Group, Germany), VA Lange, F Duddeck	
15:40	Integration of fibre-optical sensor in a GFRP transverse leaf spring for validation purposes of Finite-Element-Simulation **(VBE23_35)** T Gruenheid-Ott (German Aerospace Centre, Germany), C David, O Deisser, R Schmidt	
16:00-16:20	***COFFEE BREAK (Room under the Auditorium)***	
	Session 4 – Artificial intelligence for railways safety: Advancements in data analysis (Chair: A Mosleh and C Vale)	
	Room B032	
16:20	Reliability-centered speed management of passing trains through the turnout crossing based on wayside vibration monitoring **(VBE23_25)** K Mehrzad, S Ataei (Iran University of science and Technology, Iran)	
16:40	A deep autoencoder approach for OOR damage wheels identification in a railway freight vehicle **(VBE23_29)** T Jorge, J Magalhães, R Silva, A Guedes (Polytechnic of Porto, Portugal), D Ribeiro, A Meixedo, A Mosleh, C Vale, P Montenegro	
17:00	Damage detection in track railways using onboard monitoring system **(VBE23_34)** C Canduco, A Mosleh, A Meixedo, C Vale (University of Porto, Portugal), D Ribeiro, P Montenegro, R Silva, M Mohammadi	
17:20	Prediction of track geometrical condition by machine learning techniques **(VBE23_45)** C Vale (University of Porto, Portugal), M de L Simões	
17:40	Clustering-based methodology for intelligent wayside condition monitoring of train wheels **(VBE23_47)** A Mosleh (University of Porto, Porto, Portugal), A Meixedo, D Ribeiro, P Montenegro, R Calçada	
18:00	Railway wheel flats detection using a track-side monitoring system based on an unsupervised learning method **(VBE23_48)** A Mosleh (University of Porto, Portugal), M Mohammadi, C Vale, D Ribeiro, P Montenegro, A Meixedo	
19:00	**Poster session and RECEPTION** ***(Room under the Auditorium)***	
Material testing and simulation		
Poster 1	Thermal and microstructural characterization of the multicomponent alloy Al33wt%Cu1wt%Ni-1.2wt%Ta solidified with transient heat flow **(VBE23_1)**	WBS Jesus (Federal University of Pará, Brazil), VL Silva, LGS Nascimento, TAP Costa, OFL Rocha AP Silva
Road vehicle structural design		
Poster 2	Assessing the potential of adhesive bonding as an alternative to welding in vehicle body structures: An industrial case study **(VBE23_2)**	A Akhavan-Safar (INEGI, Portugal), RJC Carbas, EAS Marques, LFM da Silva, R Goyal, N Carrere, I Maus, Y Takahashi, J Sherwood
Poster 3	Experimental and numerical investigation of bending crashworthiness of double-hat sectioned Al-CFRP beam used in the automotive structures **(VBE23_4)**	J Bidadi, HH Miandowab, A Akhavan-Safar (INEGI, Portugal), HS Googarchin, LFM da Silva
Structural joining methods		
Poster 4	The effect of thermal residual stress on the strength of joints with multi-material laminate composite adherends **(VBE23_8)**	RCJ Carbas (INEGI, Portugal), VDC Pires, EAS Marques, LFM da Silva
Poster 5	On the mechanical behavior of L- and T-shaped wooden adhesive joints **(VBE23_31)**	P Tsokanas (INEGI, Portugal), AMS Couto, S Jalali, CSP Borges, RJC Carbas, EAS Marques, LFM da Silva
Poster 6	Failure analysis of novel hole-hemmed joints in hybrid metal-polymer structures **(VBE23_6)**	MM Kasaei (INEGI, Portugal), RJC Carbas, EAS Marques, LFM da Silva
Poster 7	Trends on joining of aluminium-steel in various joint geometries **(VBE23_53)**	R Beygi (INEGI, Portugal), RJC Carbas, EAS Marques, LFM da Silva
Poster 8	Mechanism of toughness enhancement of brittle fracture by intermittent η-intermetallic in Al/Cu joints made by FSW **(VBE23_54)**	R Beygi (INEGI, Portugal), RJC Carbas, EAS Marques, AQ Barbosa, MM Kasaei, LFM da Silva
Durability of structures		
Poster 9	Detection of the location of weak adhesion in a single lap joint in aviation applications **(VBE23_41)**	G Ramalho (University of Porto, Portugal), AM Lopes, LFM da Silva

Friday 3 November 2023	
8:40*	**Aircraft fatigue requirements – Past, present and future (VBE23_24)** CE Chaves (Embraer, Brazil), W Rissardo
	Session 5 – Aeronautical structural design (Chair: CE Chaves and EAS Marques)
	Room B032
9:20	Conceptual optimization of jury struts for regional truss-braced wing aircraft **(VBE23_22)** S Hosseini (Amirkabir University of Technology, Iran), HR Ovesy, MA Vaziry-Zanjany
9:40	Aerostructural helicopter main rotor optimisation algorithm considering mass and strength limitations **(VBE23_33)** J Kocjan (Military University of Technology, Poland), S Kachel, R Rogólski
10:00	Assessment of composite fuselage crashworthiness: A virtual testing methodology **(VBE23_44)** M Miranda (University of Porto, Portugal), A Cini, A Raimondo, V Tita
10:20	FEM modeling techniques for thin-walled structures in application to strength and aeroelastic analyses of airframe components **(VBE23_46)** A Olejnik, S Kachel, R Rogólski (Military University of Technology, Poland)
10:40-11:00	***COFFEE BREAK (Room under the Auditorium)***
	Session 6 – Various transport structural design (Chair: B Castanié and A Scattina)
	Room B032
11:00	On the impact of the body-in-white stiffness in the handling of a road vehicle **(VBE23_51)** P Millan, J Ambrósio (University of Lisbon, Portugal)
11:20	High potential: Lightweight optimised structural design of car bodies for railway vehicles with alternative drive systems **(VBE23_12)** N Schmauder (German Aerospace Center, Germany), G Malzacher, J König, M Burkat, M Fritsche, B Boese
11:40	Automated object recognition and anomaly detection in finite element models to improve model quality and correctness **(VBE23_27)** S Schlenz (BMW Group, Germany), S Mößner, CH Ek, F Duddeck
12:00	Enabling faster lightweight design for (rail) vehicles using automated topology reconstruction **(VBE23_11)** C Gomes Alves (German Aerospace Center, Germany)
12:20	Successful use of consistent lightweight construction, the Extended Market Wagon **(VBE23_49)** Ch Gomes Alves, G Kopp, D Krüger, M Laporte, N Schmauder, R Winkler-Höhn (German Aerospace Center, Germany)
12:40	Wood-steel hybrid construction in crash-relevant vehicle structures using the example of a VW T6.1 driver's door **(VBE23_50)** T Grosse (Volkswagen AG, Germany), F Fischer, D Kohl
13:00-14:00	***LUNCH BREAK (Room under the Auditorium)***
14:00*	**Research activities of composites research laboratory (CRL) (VBE23_37)** MM Shokrieh (Iran University of Science and Technology, Iran)
	Session 7 – Material testing and simulation II (Chair: M Kasaei and RCJ Carbas)
	Room B032
14:40	Design and testing of additively manufactured thermoplastic structures for impact absorption applications **(VBE23_21)** LPF Garrido, M Kasaei, EAS Marques (University of Porto, Portugal), RJC Carbas, LFM da Silva
15:00	The fracture behavior of hybrid CFRP laminates reinforced by thin-ply **(VBE23_10)** F Ramezani (INEGI, Portugal), RJC Carbas, EAS Marques, AM Ferreira, LFM da Silva
15:20	Predictions of processing parameters using supervised neural networks for carbon fibre composites by liquid composite molding **(VBE23_30)** J Sears (University of Windsor, Canada), J Johrendt, G Meirson, S Ayatollahi, A Hyrmak

15:40	Buckling optimisation of variable-axial composite laminates considering the curvature constraints **(VBE23_43)** JVB Netto (University of São Paulo, Brazil), BG Christoff, V Tita, ML Ribeiro
16:00-16:20	***COFFEE BREAK (Room under the Auditorium)***
	Session 8 – Durability of structures (Chair: A Akhavan-Safar and LFM da Silva)
	Room B032
16:20	Study on influence of adhesive thickness on the mechanical performance of CFRP double-sided repair joint **(VBE23_26)** J Fan, X Han (Dalian University of Technology, China), L Sun, X Guo
16:40	The influence of environmental conditions on the fatigue resistance of adhesively bonded structures **(VBE23_3)** FC Sousa, A Akhavan-Safar (INEGI, Portugal), RJC Carbas, EAS Marques, AQ Barbosa, LFM da Silva
17:00	Mixed mode fatigue fracture of polyurethane adhesives at different temperatures **(VBE23_19)** M Ribas (University of Porto, Portugal), A Akhavan-Safar, RJC Carbas, EAS Marques, S Wenig, LFM da Silva
17:20	Electromechanical impedance based damaged metrics for adhesive void detection in bonded joints **(VBE23_38)** AFG Tenreiro (INEGI, Portugal), AM Lopes, LFM da Silva
17:40	Detection of the level of weak adhesion in a single lap joint for structural components in aviation applications **(VBE23_40)** G Ramalho (University of Porto, Portugal), AM Lopes, LFM da Silva
18:00	The effect of structural joints in the vibration and damping of joined plates **(VBE23_52)** P Millan (University of Lisbon, Portugal), AFG Tenreiro, J Amorim, R Beygi, M Kasaei, LFM da Silva
20:00	***VBE 2023 BANQUET (UVA Calém)***