

The 26th International Slovak-Polish Scientific Conference on Machine Modelling and Simulations

13-15 September 2021, Hotel ALEXANDER, Bardejovské Kúpele, Slovak Republic

Conference Program

13.09.2021 - Monday		
14:00 - 17:00	Registration of MMS 2021 participants	(Ground floor/Foyer)
18:00 - 18:30	<p>Opening ceremony by Dean of FMT TUKE Dr. h. c. Prof., Eng. MSc. Jozef Zajac, Ph.D.</p> <p>Open dialog on the topic „Gender equality plans as a precondition for participation in the Horizon Europa project scheme ” - within the H2020 project “Linking Research and Innovation for Gender Equality” No.873134, CALIPER.</p> <p>Assoc. Prof. M. A. Dagmar Cagáňová, Ph.D., MTF STU Trnava</p>	1 st floor- Conference Hall
18:30 - 24:00	Welcome drink /Discussion and networking evening and Dinner	Restaurant

14.09.2021 - Tuesday

07:30 - 09:00	Breakfast (Restaurant)		
	Technical program and panel discussion/ Scientific paper presentations		Online participants Youtube Channel with Q&A panel
9:00 - 12:45	Modelling of structural materials, composites and nanomaterials Physical, chemical and mechanical properties of materials Session Chairs: Assoc. Prof. Eng. MSc. Lucia Knapčíková, Ph.D., Eng. MSc. Jozef Husár, Ph.D. Room: Ground floor/Conference Hall	Experimental mechanics, identification and validation Modelling and simulation, structural optimization (a part) Session Chairs: Prof. Eng. MSc. Grzegorz Jan Domek, Ph.D., Eng. MSc. Krzysztof Talaska, Ph.D. Room: 1st floor/Conference Hall I.	Jan Majernik, Mirosław Tupaj, Andrzej Trytek and Martin Podařil - Assessment of the suitability of a gate design modification compared to the change in pressing velocity considering the distribution of gases in the casting volume Tibor Krenický and Ľuboslav Straka - Method of modelling a tank with ribbing using a spatial scanner for optimized control of volume characteristics Ľuboslav Straka, Tibor Krenický and Patrik Kuchta - Modelling and optimization of energy intensity of an electrical discharge machine Łukasz Gierz, Tomasz Zwiachel, Mikołaj Spadło and Maciej Mataj - Design and FEM strength analysis of an innovative design of a front loader with an extension dedicated to the KUBOTA M5 tractor Justín Murín, Vladimír Goga, Juraj Paulech, Juraj Hrabovský, Tibor Sedlár and Vladimír Kutiš -Thermo-elastostatic analyzes of new dampers made of polymer springs with negative thermal expansion Wiesława Piekarska, Zbigniew Saternus, Marcin Kubiak and Tomasz Domański - Numerical modeling of laser welding of lap joint made of dissimilar materials Angelina Iakovets and Michal Balog - Infrastructure optimization of the corporate information network Iryna Honcharuk, Andrii Golovan, Andrii Voloshyn, Oleksii Kostenko and Oleksandr Deli - Increase of Technical Condition Control Efficiency of Marine Railways
09:00 - 09:15	Jan Górecki - Preliminary analysis of the sensitivity of the fem model of the process of dry ice extrusion in the die with a circularly converging channel on the changing its geometrical parameters	Milan Sága, Milan Vaško, Zuzana Ságová, Lenka Jakubovičová and Marián Handrik - Numerical study of the vertical vibration of a vehicle model with variable speed	
09:15 - 09:30	Jozef Bocko and Pavol Lengvarský - Elastic modulus of defected graphene sheets	Elżbieta Gawrońska, Grzegorz Domek, Piotr Krawiec and Andrzej Kołodziej - Modeling the damages of belt gears	
09:30 - 09:45	Slavomíra Božeková, Zuzana Mičicová, Darina Ondrušová, Mariana Pajtášová and Marian Božek - Application of biowaste in rubber blend	Václav Marek - Optimization and fast prototyping of polymer parts exposed to cyclic loading	

09:45 - 10:00	Andrea Feriancová, Andrej Dubec, Jana Pagáčová, Ivan Labaj and Mariana Pajtašová - The influence of silane on the physico-mechanical properties of vulcanizates using bentonite fillers	Karol Konecki, Dominik Wojtkowiak, Krzysztof Talaška, Andrzej Kołodziej and Grzegorz Jan Domek - Structural analysis of non-standard geometric variants of a shifted spur gear	Vladimír Bulej, Michal Bartoš, Vladimír Tlach, Martin Bohušik and Dariusz Wiecek - Simulation of manipulation task using iRVision aided robot control in Fanuc RoboGuide software Stella Hrehová, Jozef Husár and Vratislav Hladký - Possibility of using Matlab application to propose fuzzy computer model
10:00 - 10:15	Tomáš Balint, Jozef Živčák, Radovan Hudák, Teodor Tóth, Miroslav Kohan and Samuel Lancoš - Destructive and non-destructive testing of samples from PLA and PETG materials	Ivan Labaj, Darina Ondrušová, Juliána Vršková, Mariana Pajtašová and Andrea Feriancová - Component assembly for determination of elastomeric vulcanizate frictions	Dušan Knežo - Optimization of the study materials design in the conditions of the COVID-19 Pandemic Zbyszko Klockiewicz, Mikołaj Spadło and Grzegorz Ślaski - The influence of suspension nonlinearities on fatigue assessment of vehicle structure Yuliia Fomina and Vladimír Pavelčík - Airflow simulation when braking with a disc brake
10:15 - 10:30	Daniel Kaczor, Krzysztof Bajer, Grzegorz Domek, Aneta Raszewska-Kaczor and Paweł Szroeder - The method of obtaining polymer masterbatches based on polylactide with carbon filler	Jan Krmela, Vladimíra Krmelová, Artem Artyukhov, Sylvain Sadjiep and Alžbeta Bakošová - Computational simulation of the shear test of a multi-layered long-fibre composite with a polymer matrix	Vladimir Pavelcik and Yuliia Fomina - Influence of asymmetric airflow on the cooling performance of brake disc of railway vehicle Lucia Knapčíková, Jozef Husár and Jakub Kaščák - Experimental verification of high-strength composite materials using a simulation program
10:30 - 10:45	Michal Bartoš, Vladimír Bulej, Ivan Zajačko, Tomáš Gál, Dorota Wiecek The impact of stiffness increasing in construction of tire measuring device to measured results	Karol Konecki, Radosław Pytliński, Andrzej Kołodziej and Grzegorz Domek - Alternative methods of verifying the reconstructed outline of a non-standard spur gear	Andrii Kondratiev, Oleksii Andrieiev, Anton Tsaritsynskyi and Tetyana Nabokina - Modeling of mechanical properties of the polymeric composite reinforced with braided preform Krzysztof Magnucki and Dawid Witkowski - Effective shaping of a bisymmetrical cross section of beams under shear stresses constraints
10:45 – 11:15 COFFEE BREAK (1st Floor, close to Restaurant)			
11:15 - 11:30	Pavol Lengvarský and Jozef Bocko - Stress and Deformation Analysis of Batch Plates using Finite Element Method	Karol Grzegorz Konecki, Dominik Wojtkowiak, Krzysztof Talaška, Andrzej Kołodziej and Grzegorz Domek - Issues related to an attempt to recreate the geometry of a non-standard spur gear	Krzysztof Magnucki, Janusz Mielniczuk and Szymon Milecki - Axisymmetric bending of a circular porous plate Radoslav Vandžura, Vladimír Simkulet, Michal Hatala, Darina Dupláková and Michal Gelatko - Comparison of hand lay-up technology and vacuum bag molding technology to final quality of composite material

11:30 - 11:45	<p>Kacper Fiedurek, Pawel Szroeder, Marek Macko, Aneta Raszowska-Kaczor and Natalia Puszczkowska - Influence of the parameters of the extrusion process on the properties of PLA composites with the addition of graphite</p>	<p>Dominik Wojtkowiak, Krzysztof Talaška and Karol Konecki - Optimization of the drive mechanism with lead screw using Isight software</p>	<p>Róbert Balint Bali, Jozef Zajac, František Botko and Dominika Botková - Overview of the possibilities of surface modification of materials using energy beam technologies Zuzana Malacká - Integral transforms and sea surface elevation and dispersion relation Alan Vaško - Effect of alloying elements (Si, Mo and Cu) on mechanical and fatigue properties of nodular cast iron Zuzana Murčíňková, Svetlana Radchenko and Gabriela Kuchtová - Damping of layered porous composites and an application in machinery Halina Pacha-Gołębiowska and Wiesława Piekarska - Mechanical properties of ductile cast iron relation to the charge elements Denisa Olekšáková - Analysis of selected properties of powdered compacts</p>
11:45 - 12:00	<p>Michal Bembenek, Łukasz Kowalski and Jan Pawlik - Analysis of the influence of surface roughness of various types of wood on the results of their hardness measured by the Leeb method</p>	<p>Ireneusz Teodor Dziubek, Adam Hofman, Paweł Nowakowski and Agata Świerek - Wear and tear evaluation issues of short firearms on the example of the HK SFP9L pistol</p>	<p>Mariana Pajtašová, Beáta Pecušová, Silvia Ďurišová, Darina Ondrušová, Zuzana Mičicová, Andrea Feriancová and Simona Brigantová - The use of illite in function of filler applied in rubber blend</p>
12:00 - 12:15	<p>Vladimíra Krmelová, Mária Gavendová, Jan Krmela, Petra Skalková and Vladimír Piaček - Thermal and mechanical characterization of drawn polypropylene fibres</p>	<p>Lenka Jakubovičová, Peter Kopas, Milan Vaško and Marián Handrik - Technical solution of the modern conveyor system</p>	<p>Darina Ondrušová, Slavomíra Božeková, Mariana Pajtašová, Ivan Labaj, Marian Božek, Juliana Vršková, Petra Skalková - Study of new elastomeric composite systems containing wood ash based alternative filler</p>
12:15 - 12:30	<p>Petra Skalková, Vladimíra Krmelová, Jan Krmela, Darina Ondrušová and Andrej Crkoň - Composite materials with epoxy matrix and their properties</p>	<p>Ireneusz Teodor Dziubek, Andrzej Kołodziej and Krzysztof Talaška - Modelling the tip-up barrel firearms on the example of the Beretta 21A pistol</p>	<p>Róbert Janík, V. Vargová, Jana Šulcová and Mariana Pajtašová - Modification of the glass surface by DCSBD plasma discharge to improve adhesion of decorative gold</p>
12:30 - 12:45		<p>Marek Macko, Daniel Łączny and Jakub Lewandowski - Selection of parameters during shredding of corn stalks as an additive to the polymer mixture</p>	<p>Simona Brigantová, Mariana Pajtašová, Róbert Janík, Darina Ondrušová and Silvia Ďurišová - The influence of liquid rubber on selected properties of rubber compound and its vulcanizates Matúš Gefatko, Michal Hatala, Radoslav Vandžura and František Botko - Longitudinal critically refracted (LCR) ultrasonic wave for residual stress measurement</p>
<p>12:45 – 13:30 LUNCH (Restaurant)</p>			

13:30 - 17:30	Technical program and panel discussion/ Scientific paper presentations		<p>Marek Kočiško, Martin Pollák, Adrián Vodilka and Dušan Paulišin - Design and implementation of a diagnostic system for measuring high-precision reducers</p> <p>Martin Pollák, Marek Kočiško, Jozef Dobránsky-Analysis of software solutions for creating models by a generative design approach</p> <p>Jozef Husár, Lucia Knapčíková and Stella Hrehová - The Concept of Implementation of Multifrequency RFID System Industrial Involvement in Laboratory Conditions</p> <p>Daniel Łączny, Marek Macko, Krzysztof Moraczewski and Jakub Lewandowski - Influence of design features of a multi-edge shredder on the operational characteristics of the process of comminution corn stalks</p> <p>Vratislav Hladký, Ján Piteľ, Kamil Židek, Jakub Demčák and Stella Hrehová - Design of control algorithm for manipulation device based on pneumatic artificial muscles</p> <p>Jakub Demčák, Jozef Husár, and Vratislav Hladký - SMART Identification by Vision System</p> <p>Eduard Franas, Marek Kočiško, Jakub Kaščák, Simona Hlavatá and Adrián Vodilka - Virtual reality and its possible integration into the process of distance learning focused on technically oriented subjects</p> <p>Patrik Kuchta, Luboslav Straka, Jozef Zajac and Svetlana Radchenko - Modern trends in the development of electrical discharge machining</p> <p>Renata Turisova and Stefan Markulik - Capability measurement of non-standard parameters of manufacturing processes</p> <p>Juraj Glatz, Róbert Janošik and Hana Pačaiová - Technical cleanliness as an important factor in industry</p> <p>Anna Šmeringaiová - Design gear mechanisms using Design Accelerator</p>
	<p>Modelling and simulation, structural optimization (a part) Methods and systems in machine design (a part)</p> <p>Session Chairs: Prof. Eng. MSc. Ján Vavro, Ph.D. Assoc. Prof. Eng. MSc. Ján Vavro, jr., Ph.D. Room: Ground floor/Conference Hall</p>	<p>Machine dynamics and multibody systems simulations Advanced industrial, automotive and green energy applications Methods and systems in machine design (a part)</p> <p>Session Chairs: Assoc. Prof. Eng.MSc. Ján Krmela, Ph.D. Assoc. Prof. Eng.MSc.Vladimír Dekýš, Ph.D. Room: 1st floor/Conference Hall I.</p>	
13:30 - 13:45	<p>Pawel Knast, Andrzej Kołodziej and Karol Grzegorz Konecki - Modeling of complex construction problems for randomly changing technological processes</p>	<p>Alžbeta Sapietová, Vladimír Dekýš, Milan Sapieta, Andrej Jastraban and Miroslav Pástor - Modelling and Analysis of a Virtual Prototype of a Rotary Machine in MSC.ADAMS</p>	
13:45 - 14:00	<p>Ján Vavro jr., Ján Vavro, Ľubomír Marček, Miloš Taraba and Lukáš Klimek - Kinematic analysis for six-item mechanism by means of the SolidWorks program</p>	<p>Vladimír Dekýš, Mária Čilíková, Martin Gavlas, Pavol Novák, Alžbeta Sapietová and Miroslav Pástor - Contribution to the analysis of grinder vibrations using condition monitoring procedures based on vibration measurements</p>	
14:00 - 14:15	<p>Magdalena Dobrzanska and Pawel Dobrzanski -Simulation modelling of material handling using AGV</p>	<p>Vasyl Mateichyk, Mirosław Smieszek, Mykola Tsiuman and Roman Symonenko - Modeling the vehicle operational efficiency in the "Vehicle - Infrastructure" system</p>	
14:15 - 14:30	<p>Pawel Dobrzanski and Magdalena Dobrzanska - The use of digital filtration methods in AGV laser navigation systems</p>	<p>Jerzy Winczek, Marek Gucwa, Krzysztof Makles, Miloš Mičian, Anshul Yadav - The amount of heat input to the weld per unit length and per unit volume</p>	

14:30 - 14:45	Marián Handrik, Jaroslav Majko, Milan Vaško, Filip Dorčiak and Peter Kopas - Research on influence of mesh parameters modification on solution accuracy of finite element analysis	Marek Gucwa, Jerzy Winczek, Krzysztof Makles, Miloš Mičian and Anshul Yadav - Modification of the structure and properties of hardfaced layers with TIG high frequency method	Silvia Maláková and Samuel Sivák - Gear shape optimization for non-circular gearing Samuel Sivák and Silvia Maláková - Constructional design of the body shape of large gear wheels Andrii Golovan, Iryna Honcharuk, Oleksandr Deli, Oleksii Kostenko and Yurii Nykyforov - System of Water Vehicle Power Plant Remote Condition Monitoring
14:45 - 15:00	Ján Vavro jr., Ján Vavro, Ľubomír Marček, Miloš Taraba and Lukáš Klimek - Dynamic analysis and distribution of stress for six-item mechanism by means of the SolidWorks program	Mirosław Smieszek, Vasyl Mateichyk, Mykola Tsiuman, Roman Symonenko, Igor Gritsuk and Mykola Bulgakov - Information system for remote monitoring the vehicle operational efficiency	Kateryna Kravchenko, Pavol Šťastniak, Jozef Harušinec, Juraj Gerlici and Marián Moravčík - Technic solutions analysis and development of the innovation design protective elements of railway tank wagons
15:00 - 15:15	Ivana Klačková, Ivan Kuric, Ivan Zajačko, Vladimír Tlach and Dorota Wiecek - Virtual reality in Industry	Mirosław Śmieszek and Vasyl Mateichyk - Determining the fuel consumption of a public city bus in urban traffic	Maciej Bodnicki - Measurement problems of miniature electrical machines František Pribilinec and Lukáš Čajkovič - Improving measuring line parameters of the UIC test bench
15:15 - 15:45 COFFEE BREAK (1st Floor, close to Restaurant)			
15:45 - 16:00	Daniela Onofrejová and Michaela Balážiková - Simulation model for evaluation of ergonomic load in the use of exoskeletons	Marian Dudziak and Grzegorz Jan Domek - Design and selection of a belt drive for an electric generator	Lukáš Čajkovič and František Pribilinec - Improving mechanical properties of the UIC test bench
16:00 - 16:15	Hana Pačaiová, Renáta Turisová, Milan Oravec, Zuzana Kotianová, P. Darvaši and T. Gazda - A new concept of machinery safety in digital management	Dominik Wojtkowiak, Krzysztof Talaśka, D. Wilczyński, Jan Górecki, Grzegorz Domek - Design issues related to the construction of automatic devices for conveyor belt perforation	Ján Dižo, Miroslav Blatnický, Oleksandr Kravchenko, Vasyl Mamrai, Dalibor Barta and Peter Gasper - Simulation of a vehicle movement on a roadway with stochastic irregularities prescribed by the power spectral density Anna Šmeringaiová - Study vibration of worm gear boxes Jozef Maščenik - Determination of the coefficient of friction in a screw joint loaded with a controlled torque
16:15 - 16:30	Ján Vavro jr., Ján Vavro, Ľubomír Marček, Miloš Taraba and Lukáš Klimek - Kinematic and dynamic analysis and distribution of stress for seven-item mechanism by means of the SolidWorks program	Martin Stepanek, Karel Raz and Zdenek Chval - Topology optimization of the tool holder produced with additive manufacturing	Michal Duhančík, Štefan Gašpár and Tomáš Coranič - Sensorless Control of Asynchronous Motor at Low speed Jacek Jackiewicz - Modeling the longitudinal dynamics of electric multiple units with Xcos/Scilab software
16:30 - 16:45	Jozef Svetlík, Lukáš Hrivniak, Michal Šašala and Tomáš Stejskal - Application of continuous carbon fiber reinforced composites in a modular system	Nadiia Artyukhova, Jan Krmela, Vladimíra Krmelová and Artem Artyukhov - Drying Machines with Combined Hydrodynamic Regimes	Anna Jaskot and Bogdan Posiadała - Modeling and analysis of motion with wheel slip of the mobile platform with four wheel drive Zbyszko Klockiewicz, Grzegorz Ślaski and Hubert Pikosz - The method of kinematic excitation reconstruction based on measured suspension dynamic responses – experimental verification

16:45 - 17:00	<p>Łukasz Warguła and Mateusz Kukla - Analysis of the usability of rolling resistance measurement methods to study the mechanisms of some wheelchairs</p>	<p>Karel Raz, Zdenek Chval, Martin Habrman and Aneta Milsimerova - Thermal specification of 3D printed injection moulds made from PA12GB</p>	<p>Jakub Kaščák, Marek Kočíško, Lucia Knapčíková, Tomáš Coranič and Jozef Török - Multibody system simulation as a predictive tool for possible estimation of negative effects caused by vibrations of FDM device</p>
17:00 - 17:15	<p>Michal Šašala, Lukáš Hrivniak, Jozef Svetlík and Štefan Ondočko - Research of creating mold for crayons with use of additive manufacturing technique</p>	<p>Emil Evin and S. Nemet - Results verification of numerical simulation of the side impact of a vehicle in a three-point stretch-bending test</p>	<p>Gabriel Harčarik - Experimental verification tests of isokinetic equipment used in sport and rehabilitation</p> <p>Grzegorz Jan Domek and Krzysztof Talaška - Model of the pressing and drying system of organic material</p> <p>Krzysztof Tyszczyk, Grzegorz Śmigielski and Grzegorz Jan Domek - Testing and simulating the working conditions of an organic material shredders</p>
17:15 - 17:30	<p>Bartosz Wieczorek and Mateusz Kukla - The method of measuring motion capture in wheelchairs during actual use – description of the method and model of measuring signal processing</p>	<p>Zdenek Chval and Karel Raz - Production injection moulds with additive technology by the HP MJF 4200 printer</p>	<p>Robert Grega, M. Kacir and Jozef Krajnak - Failure analysis of flexible couplings by self-heating</p> <p>Sebastián Solčanský, Súrja Knap- Simulation of running a vehicle with a Y25 bogie on a theoretical track</p> <p>Zuzana Mičicová, Slavomíra Božeková, Mariana Pajtášová and Darina Ondrušová - Curing characteristics and rheological properties of bentonite-filled rubber blends</p> <p>Slavomíra Božeková, Zuzana Mičicová, Darina Ondrušová, Mariana Pajtášová and Marian Božek - Application of biowaste in rubber blend</p> <p>Tomáš Kalina, Václav Marek, S. Jeníček and R. Letak- Thermal analysis and experimental testing of clamping jaws for thermomechanical simulator</p> <p>Vladimír Bulej, Michal Bartoš, Martin Bohušík- Simulation of mechatronic system in Matlab/Simulink</p> <p>Josef Soukup, Alžbeta Sapietová, Jan Skočilas, Blanka Skočilasová-Experimental assessment of eigenfrequencies and stiffness of the elastically supported body</p> <p>Lenka Rychlíková, Vladimír Dekýš, Jan Skočilas, Milan Žmindák, Blanka Skočilasová, Josef Soukup- Loading of thin composite plate by low-speed impact</p> <p>Tomasz Domański, Wiesława Piekarska, Marcin Kubiak, Zbigniew Saternus- Computer simulations and experimental research using modern chamber IR infrared</p>

			heaters to predict the properties of steel bars tensed at different temperatures Tomasz Domański, Zbigniew Saternus, Marcin Kubiak, Wiesława Piekarska - Numerical prediction of σ - ϵ diagram during tension of flat samples with hole, experimentally verified using Dantec Q-400 system
17:30 - 19:00	Free Program		
19:00 - 24:00	Social evening/Gala dinner with music 1 st floor Conference Hall		

15.09.2021 - Wednesday		
07:30 - 09:30	Breakfast Closing ceremony of MMS 2021	Restaurant
10:00 - 11:00	Technical tour to Bardejovské Kúpele	Skansen/Open-air museum, Sisi Museum, Kolonáda