

13th International Conference on Automotive Safety (Automotive Safety 2022)

IOP Conference Series: Materials Science and Engineering
Volume 1247

Kaluza, Slovakia
26 - 29 April 2022

ISBN: 978-1-7138-5811-9
ISSN: 1757-8981

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence.
Licence details: <http://creativecommons.org/licenses/by/3.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2022)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Preface	
Peer Review Statement	
Analysis of Factors Affecting the Energy Consumption of an EV Vehicle - A Literature Study	1
<i>A Skuza, R S Jurecki</i>	
Risks of the Insurance in Road Transport.....	9
<i>J. Kubáňová, I. Kubasáková, M. Poliak</i>	
Identifying the Age of a Vehicle for Commercial Safety and Forensic Purposes Using “Window Stamps”	22
<i>R. Rak, V. Sulc, F. Vlach, D. Kopencova, V. Hudecova</i>	
Influence of Road Conditions on the Values of Longitudinal Acceleration During Braking of a Tourist Coach	38
<i>P Łagowski, T Stańczyk, E Szumska, A Zuska, P Grabski, M Jaśkiewicz, R Jurecki, D Kurczyński</i>	
IR Spectroscopy Analysis of Skid Marks for Vehicle Equipped with ABS Considering Slip Ratio.....	44
<i>E Sys, Ł. Gosławski, A Mrowicki, M Głogowski, S Madziara, B Droś, W Zakrzewicz, P Kubiak</i>	
Motor Vehicles’ Problems with Keeping the Straight Driving Direction; Analysis of Selected Case	50
<i>T Pusty, R Lewiński, H K Kowieski</i>	
The Estimation of Frequency Response of Nonlinear Quarter Car Model and Bilinear Model of Damper Characteristics	56
<i>Z Klockiewicz, G Ślaski</i>	
Airborne Sound Transmission in Fluted PVC Panels-Properties of Materials and Structures	67
<i>JM Kopania, W Zakrzewicz, P Kubiak, A Mrowicki, M Głogowski, J Gralewski, G Bogusławski, K Wójcicki, P Gaj</i>	
Lateral Acceleration Tests During Circular Driving Maneuvers and Double Lane Change	79
<i>P Grabski, M Jaśkiewicz, R Jurecki, D Kurczyński, P Łagowski, TL Stańczyk, E Szumska, A Zuska</i>	
Study of Lateral Acceleration of a Ford Transit Car on Various Road Surfaces.....	86
<i>D Kurczyński, P Łagowski, T Stańczyk, E Szumska, A Zuska, P Grabski, M Jaśkiewicz, R Jurecki</i>	
The Concept of the Application of Modelling and Simulation to Simplify and Reduce the Cost of Durability Tests of Vehicles and Their Components.....	95
<i>Zbigniew Lozia</i>	
Quasi-Static Research of Cornering Stiffness for Selected Tires of UTV/ATV Vehicles.....	100
<i>J Jackowski, M Żmuda, M Wieczorek</i>	
Yellow and Brown Grease—characteristics of Compression-Ignition Engine.....	105
<i>R Ciesielski, M Zakrzewski, O Shtyka, T Maniecki, A Ryłski, M Wozniak, P Kubiak, K Siczek</i>	

Analysis of Longitudinal Acceleration During Rapid Minibus Braking on Various Surfaces	129
<i>D Kurczyński, P Łagowski, T Stańczyk, E Szumska, A Zuska, P Grabski, M Jaśkiewicz, R Jurecki</i>	
Tests of Lateral Acceleration During a Controlled Skid - Various Types of Vehicles.....	137
<i>D. Frej, M. Jaśkiewicz, R. Jurecki, D. Kurczyński, P. Łagowski, T.L. Stańczyk, A. Zuska, E.M. Szumska, P. Grabski</i>	
Road Testing of Lateral Acceleration in Urban Bus.....	143
<i>E M Szumska, T L Stańczyk, A Zuska, P Grabski, M Jaśkiewicz, R Jurecki, D Kurczyński, P Łagowski</i>	
Experimental Testing of Longitudinal Acceleration in Urban Buses	149
<i>E M Szumska, T L Stańczyk, A Zuska, P Grabski, M Jaśkiewicz, R Jurecki, D Kurczyński, P Łagowski</i>	
Effects of Motorbike Front Suspension Component Operation on Torsional Vibration Frequencies	157
<i>A Dębowski</i>	
Modelling of Dynamics of the Suspension of Tandem Axles of a Multi-Axle Vehicle Provided with a Novel Load-Equalising System	164
<i>R Pilatowicz, W Luty</i>	
Vibration Damping Performance of the Electrohydraulic Self-Leveling Unit of the Tracked Platform of Robotic Bricklaying Combine.....	174
<i>R. Dindorf, P. Woś</i>	
The Bicycle Model of a 4WS Car Lateral Dynamics for Lane Change Controller	184
<i>A Dębowski, J J Faryński, D P Żardecki</i>	
The Issue of Empirical Testing of Highly Automated Vehicles	193
<i>Dariusz Więckowski</i>	
Experimental Testing of Selected Energy Absorbers in the Context of Their Use in Rear Underrun Protective Devices	203
<i>J Jackowski, P Posuniak, Z Roźnowicz</i>	
Assessment of the Vehicle Body Side Stiffness Influence on the Process of Hazard Generating in Front-To-Side Vehicles' Collision	212
<i>M Ziubiński, L Prochowski</i>	
The Influence of Seatback Reclination on Body Kinematics During Low-Speed Frontal Impact	222
<i>A Górniak, W Górniak, J Matla, M Zawisłak</i>	
Frontal Collision Simulation in Laboratory Conditions	233
<i>D Frej, M Jaśkiewicz, P Kubiak, A Zuska, D Więckowski</i>	
Methods for Determining the Physical Quantities Describing the Vehicle Movement and the Driver During a Road Accident	240
<i>M Gidlewski, T Pusty, L Jemioł, H Kochanek</i>	
The Importance and Directions of Electromagnetic Compatibility Test Methodologies Development in the Aspect of Vehicle Safety	246
<i>W Zaklika, D Sterniczuk</i>	
Selection of Child Seats in Terms of Vibration Comfort	254
<i>D Frej, A Zuska, P Kubiak</i>	

Simulation Tests of the Integrated Lane Change Control System	261
<i>M Gidlewski, L Jemioł, D Żardecki</i>	
Military Special Vehicle Multifunctional Seat as an Element of Vehicle Passive Safety	271
<i>T Wróbel, M Szudrowicz, W Luty, J Seńko</i>	
Hazards Arising During Road Accidents in Cases of Vehicle Adaptation for the Person with Special Needs	279
<i>L Prochowski, M Ziubiński, T Mantur</i>	
Comparison of Freight Forwarder Liability in Selected Countries of the European Union and Selected Countries of the Commonwealth of Independent States (CIS)	290
<i>M Poliak, E Salamakhina, N Lakhmetkina, N Zhuravleva</i>	
Driving Simulator as a Tool for Reaction Time Measurement.....	299
<i>K. Čulík, V Štefancová, A. Kalašová</i>	
Comparison of Driver Awareness in Real Traffic and Driving on a Simulator.....	308
<i>J. Beňuš, M. Poliak</i>	
Knowledge Centre for Transport Accessibility and Mobility of People with Special Needs Using Individual Transport Modes	317
<i>J Jackowski, M Gidlewski, P Posuniak</i>	
Lateral Acceleration of Passenger Vehicle in Roundabouts in Term of Cargo Securing	324
<i>O. Kuba, J Jagelcak</i>	
Influence of Harsh Braking Parameters on Safety of Load Transport.....	336
<i>A Zuska, P Grabski, M Jaškiewicz, R Jurecki, D Kurczyński, P Łagowski, T Stańczyk, E Szumska</i>	
A Three-Wheeled Vehicle for the Disabled People.....	344
<i>K Stańko-Pajqk, B Bursa, J Seńko, T Detka, S Korczak, R Nowak, K Popiołek, J Lisiecki, A Paczkowski</i>	
Evaluation of the Safety of Overweight And/or Oversized Traffic Based on the Analysis of Lateral Acceleration During Transport.....	350
<i>J. Vrábek, M. Loman, J. Pařo, B. Šarkan, A. Hudcovský</i>	
Design of an Electro-Pneumatic Driving Simulator	362
<i>Piotr Woś, Ryszard Dindorf</i>	
Carpooling and the Reduction of Urban Traffic	369
<i>Andrzej Szymanek, Józef Stokłosa, Tomasz Zawisza</i>	
Improvement of Energy Efficiency in the Drive System of an Electric Car with PMSM	382
<i>S German Galkin, D Tarnapowicz, M Staude, T Zaleski, M Jaškiewicz</i>	
Carports as an Element of Energy Security for Electric Vehicles	390
<i>A Małek, Ł Wojciechowski</i>	
Determining the Trajectory of the Vehicle Motion on the Basis of the Recorded Physical Quantities Describing Its Dynamics During Typical Maneuvers in Road Traffic	399
<i>T Pusty</i>	

The Use of Probabilistic Networks in the Analysis of Risks to the Components of the Bus Power System with Hydrogen Fuel Cells 405
D Kasperek, G Bartnik, A Marciniak, A Malek, D Pieniak, L Gil

Author Index