Monday 12th August 2019

07:30 Registration – Lindholmen Conference Centre Foyer
08:30 Opening ceremony – Main hall

Plenary session I: Main hall Chair: Matthias Klop

09:10 Modelling, simulation and evaluation of ground vibration caused by rail vehicles. Ruedal Thompson, Georgea Kounavis, Evangelos Moratis, State of the Art paper 10.1002/9781119962734.100273

10:30 Effect of floating bridge motion on vehicle ride comfort and road grip. Dragon Skocek, 266

11:00 Coffee break

Room A

11:30 Designing and evaluating active safety systems for rollover prevention of all-terrain vehicles. Efyan Niyaz, Vishal Venkatachalum, Lars Duggje, 053

The role of human sensory dynamics in car driving. Christopher Nath, David Cole 205

Estimation of friction coefficient between outside wheel flange and rail considering influence of rail/wheel wear. Yosuke Ishiyangai, Rokui Michtzjui, Akira Matsuzato, Yasuhito Sato, Hiroyuki Ohno, Daisuke Yamaguchi, Matsuhisa Tanigami, Takuya Matsuda, Takanori Matsumi 185

12:00 A feedforward controller design for lane keep assist employing differential braking. Hironori Ito, Akira Noge, Masayuki Hidaka, Ryo Inanoda 082

Nonlinear observer design for guidance and traction of railway vehicles. Andreas Heikkilä, Christoph Schwarz, Alexander Kiek, Tolimian Blaha 070

Study on non-linear parametric model of hydraulic damper for railway vehicles before relieving. Hongxing Gao, Minna Chi, Xuesong Jiao, Shulin Liang, Changxin Chi, Anxian Zhu 089

On-board wheel profile classification based on vehicle dynamics – from physical effects to machine learning. Bernd Luber, Felix Sarnitzer-Palmer, Gabor Müller, Lorentz Ploetsch, Klaus Stöhr 094

12:30 Corner test cases foradas: a computational study on the influence of road irregularities on vehicle aSSIONs. Koen Kersve, Stratis Kanarakos 127

Wheelchair contact creep measurement and low-speed wheel climb derailment investigation. Kingo Zhu, Kaiping Zeng, Nicholas Wilson, Randy Thompson, Ali Tajaddini 357

Using sound sources in multibody simulation of autonomous vehicle. Archeological studies. Mathias Lidberg, Jonas Alfredson 152

13:00 Lunch break

14:00 Vehicle localization during gear dynamics. Lietian Gao, Lu Xiong, Xin Xia, Yishi Lu, Zhiping Yu, Shulin Liang, Changxin Chi, Anxian Zhu 089

On the ground in the koup simulation of electric power assisted steering system. Weizhe Chen, Shenhai Ren, Bengt Jacobsson, Utsav Kho, Andrea Blanch, Matthias Klomg 137

Wheelchair training – semi-automated approach. TI Mei, Rouvoi Sevin, Hong Li 073

A direct control approach for automatic steering and stability of motorized independently rotating wheels. Xiaoyuan Liu, Roger Goodall, Simon Ivancik 126

Prediction of long-term damage in railway crossings accounting for variability in dynamic traffic loads. Rostislav Srisky, Jens Nielsen, Bjorn Olofsson, Sergio Neves 226

14:30 Dynamic multiobjective performance assessment for an autonomous vehicle. Andri Kemell, Elias Weber, Stenfen Måller 093

Real-time emergency time change using the modified hamiltonian algorithm. Victor Fors, Younggan Gao, Bjorn Olofsson, Tim Gordon, Lars Nielsen 145

Numerical simulation and experiment validation on curve passing performance of railway vehicle with independently rotating wheels: using negative tread concavity. Yang Wang, Shih-Hsin Lin, Hiroshi Tajima, Kokiho Shida 283

Path control in limits of vehicle handling: a sensitivity analysis. Erik Wachsen, Antwan Schnitz, Fredrik Bruzelius, Mohsen Alirezaei 153

Real-time capable nonlinear predictive slip control for combined driving and cornering. Markus Meier, Alessandro Scarnacoi, Patrick Gruber, Alva Sonianti 190

Design and assessment of a controller on a rail vehicle with wheel motors. Mobinlhor Farhat, Christoph Wond, Omar Shabz, David Cushee, Julian Stow, Ruichen Wang, Roger Goodall, Martin Whiteley 232

Relative movement of switch/stock rails and the railwheel interface interaction. Yann Bein, Dominik Kastenwurst, Belle Samba 175

15:00 Coffee break

16:00 Evaluation of combined energy-efficient and stability strategies utilizing direct yaw moment control. Peikan Sun, Akiko Sunzuno Tristanjull, Lars Duggje, Jenny Jerrendal 040

An investigation of longitudinal tyre force observation for slip control system development. Shengzhao Zhu, Leen Henderson, Edo Drenth, Fredrik布鲁涅利斯, Bengt Jacobsson 013

Torsional vibration as a method of diagnostic tool for wheel flatness. Zhenwei Wang, Paul Allen, Gaotao Huang, Shili Ku, Weiliao Zhang 244

Dynamic response of geared transmission system of high-speed train due to wheel roll polynomial control. Seogin Jym, Jowon Nah, Demark Park 298

Towards the limits of vibration attenuation in drivetrain system by torsional dynamics absorber. Viktor Berbysk 163

Estimation of state parameters of a dual extended kalman filters for active roll polygonal control. Shengzhao Zhu, Jiyang Zhu 240

Dynamic analysis of ride comfort of a high-speed train based on a coupled track-train-seat- human model with vertical, lateral and roll vibrations. Yu Wu, Yi Qiu 319

16:30 Vehicle sideslip angle estimation using disturbance observer. Bei-shuo Kwan, Kangyu Yi 380

Vehicle sideslip estimation for four-wheel steering vehicles using a particle filter. Basilio Levine, Riccardo de Lazzaro 207

Detection method for out-of-round wear wheel on dynamic response Xiaduo Ku, Jianchao Liu, Shichao Sun, Mingshan Wu, Qinyuan Li 207

17:00 Welcome reception

17:30
Room | Hall | Beside | Main hall | Pascal
---|---|---|---|---
11:00 | Road 21- | Ada II | Chairman: Jenny Jerrelind
11:00 | Road 22- | Standards, assessment & validation | | 
11:30 | Review on tire-road friction potential estimation technologies | An Tuononen, Markus Orava, Aro Niskanen | | 
12:00 | Single wheel braking - a new method to measure friction potential on public roads | Thorstein Lagravski, Johan Roos, Steffen Müller | | 
12:00 | Validation of driver model based handling quality evaluation by cerebral blood flow | | | 
12:30 | Lunch break | | | 
13:30 | Road 23 - Poster session I | Chair: Tim Gordon | | 
13:30 | Road 24 - Poster session II | Chair: Fredrik Bruzelius | | 
15:30 | Coffee break | | | 
16:00 | Road 25 - Driving automation II | Chair: Steffen Müller | | 
16:00 | Road 26 - Handling dynamics II | Chair: Werner Schüeber | | 
16:30 | Control of a scaled vehicle in and beyond stable limit handling | Matti Baets, Hans Helleboom, Mohammad Akkesei | | 
17:00 | Flow field and neural network guided steering control for rigid autonomous vehicles | MengTuan Song, Tim Gordon, Yinqi Liu, Jun Wang | | 
18:00 | City Boat Tour “Paddan” | | |
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<td>08:30</td>
<td>Chair: Stefano Bruni</td>
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<td>08:30</td>
<td>Train-track-bridge dynamic interaction: a state-of-art review</td>
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<td>08:30</td>
<td>Wanming Zhai, Zhaowei Chen, Zhaolin Han, Liang Ling, Shengyong Zhu</td>
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<td>08:30</td>
<td>State of the Art paper 10.1080/00423114.2019.1605085</td>
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<td>09:30</td>
<td>Model predictive control for evasive steering of autonomous vehicle</td>
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<td>Wansik Choi</td>
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<td>10:00</td>
<td>A parameterized turnout model for simulation of dynamic vehicle-turnout</td>
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<td>interaction with an application to crossing geometry assessment</td>
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<td>Björn Pålsson, 339</td>
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<td>Chair: Patrick Grubber</td>
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<td>Road 31 - State estimation II</td>
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<td>Chair: Peter Gaspar</td>
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<td>Road 32 - Tyre modelling I</td>
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<td>11:00</td>
<td>Chair: Shinhai Ran</td>
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<td>Rail 31 - Vibration control 2</td>
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<td>Chair: TX Mei</td>
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<td>Rail 32 - Vehicle design 1</td>
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<td>11:00</td>
<td>Chair: Carlos Casanueva</td>
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<td>12:00</td>
<td>Light lunch</td>
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<td>Technical visits</td>
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<td>Optional Archipelago Boat Tour</td>
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Thursday 15th August 2019

Plenary session IV – Main Hall

Chair: Bengt Jacobson

08:30 Trends in vehicle motion control for automated driving on public roads
Matthias Klomp, Mats Jansson, Lin Lage, Ian Henderson, Enrico Regolin, Stefan Schrinner, State of the Art paper, 10.1007/978-3-319-27174-4_20

09:30 Novel automated urban maglev transport system: A validated multibody simulation
Berndard Kreuzer, Simon Fik, 334

10:00 Wheel/rail creep force model for wayside application of top-of-rail products incorporating carry-on and consumption effects
Ziegler, Georg, Trouiller, Klaus Stix, Roger Lewis, 760

10:30 Coffee break

11:00

Road 41 – Suspension and ride control
Chair: Ingemar Johansson

Identification of kinematic points based on km measurements from the suspension motion simulator
Chao Liu, Yi Zhang, Clemens Drechsel, Felix Kueckel, Jan Kubenz, Gunther Prokop

Pecodriving behaviour on different road surfaces
Alexander O’Neill, Patrick Gruber, John Watts, Jan Pries

Dynamic behavior of a high-speed train subjected to earthquake and emergency braking
Liang Ling, Kaiyang Wang, Wanning Zhao

Running dynamics and control mechanics comparison of two freight bogies running in plain line and through switch-and-crossing
Gianluca Mignana, Hugo Mogalhaes, Yann Reisi, Andrea Bracaroli

Measurement and formation mechanism of high order wheel polygonal wear in high-speed railway
Xinxiwen Wu, Wenlin Shen, Wubin Cai, Sushanth Rakkheja, Mauro Chi, Yinhua Huang

11:30

Posture control of all terrain mobile robot with vibration isolation system
Fangwu Mu, Zhen N, Lulu Wu, Yang Wang, Jianhong Nie, Lianwu Wu, Weiwei Jia

A grey box model approach for the prediction of tire energy loss
Stefan Stradl, Michael Burger

Safety to crossroad of railway vehicles in presence of wind barriers: numerical-experimental approach
Gisella Tomasini, Elise Brambilla, Stefano Cii

On the two-point-wheel-rail contact solution using the edge-graph contact method
Javier Arquehina, José Escalona

12:00

Comparative performance analysis of active and semi-active suspensions with road preview control
Ivan Cook, Jito Deur, Eric Teng, Daoer Hou

Influence of the speed-dependent tire-road friction on the car driving dynamics
W Huang, Zhongzhuang Song, Jianqiao Tan, Qiong Chen, Kongfui Gao

On-track measurement of arodynamic loads for high-speed trains
Lei Wu, Jing Zeng, Pingbo Wu, Hao Gao, Wenshao Hao

Comparison of wheel-rail contact modeling in multibody system online simulation
Binbin Liu, Stefano Bruni

12:30 Lunch break

13:00

Road 43 – Specialized vehicles, Chassis-Subsystem

Trajectory tracking of a four-wheel-steering vehicle on harsh road surface
Fangwu Mu, Jianhong Nie, Liang Wu, Nick Li, Guanjun Xu, Weiwei Jia

Analysis of active suspension performance improvement based on introducing front-/ rear-link coupling
Ivan Cook, Jito Deur, Eric Teng, Daowui Hou

Loosomate wheel polygonal wear due to discrete irregularities: Field measurement, simulation and mechanism
Gongpeng Tao, Zefeng Wen, Guosheng Chen, Ran Luo, Kunsong Jin

Study on the characterization of degraded curvature in Sweden to enhance safety and reliability
Zhendong Liu, Sebastian Stichel, Peter Lin, Jian Hjort

A Galerkin approach for modeling the pantograph-catenary interaction
John Martin, Stephen Duncan

14:00

Dynamics, control and stability of motion of electric scooters
Daniel Garcia-Velajo, Werner Schiebel, Alfonsa Blanco

Development of a cab suspension for a 4x2 semi-truck
Upur Deypal, Eiji Seyama, Saburo Sakiyama, Mehmet Murat Topal

The formation mechanism of high-order polygonal wear of metro train wheels
Koosuwan Yang, Wei Li, Gongpeng Tao, Zefeng Wen

Semi-active dampers for multiple pantograph operation
Stefano Bruni, Marco Ravner, Alvaro Facchetti

14:30

Parameter sensitivity analysis of the anti-roll performance of straddling monorail vehicle
Choaraon Wang, Yuanjie Ji, Lihui Ren, Huang Dacai

A new generic model for adaptive shock absorbers
Niulian Kuai

Comparison of wear models for prediction of railway wheel polygonal wear
Bo Peng, Simon Iwnicki, Philip Shackleton

Inertia-embedded primary suspension optimization on an industrial railway vehicle model
Tim Lewis, Yu Li, Gabriel Tackr, Jason Zheng Jiang, Simon Neil, Malcolm Smith, Roger Goodall, Simon Iwnicki, Neill Drinkwater

15:00

Stochastic sensitivity of external impact factors on the straight-line performance of a generic motorcycle
Christoph Feichtinger, Peter Fischer

A novel approach for parametrization of suspension kinematics
Georg Rill, Abel Arietina Castro

Suppression measures for high-order polygonal wear of railway wheels based on resonace theory
Huangyan Bai, Yuan Jia, Dao Li

A methodology to study high-speed catenary systems with realistic contact wire irregularities
Xiaofeng Song, Pedro Antunes, Joo Pombio

15:30

Coffee break

16:00

Road 45 – Driving automation III
Chair: Lars Druge

Search-based motion planning for performance autonomous driving
Zhanan Kanou, Enrico Regolin, Stijn Stertinger, Martin Hein, Antonella Ferrara

The influence of tyre lateral force for central allocation of yaw torque
Derong Yang, Manh Johannessen

The influence of lateral tire force on yaw attributable to wheel slip control
Jiyong Wang, Junfeng Liu, Guangqi Li

16:30

Lateral control design for autonomous vehicles using a big-data-based approach
Daniel Fenyves, Balazs Nemeth, Peter Gaspar

Torque vectoring control on ICE for electric vehicles with individually actuated wheels
Timur Agliullin, Violinti Hanna, Vincenzo Riccardi, Manuel Acosta, Klaus Augsburg, Corina Sandor, Bayrak Shyshou, Dimitry Savitski

An innovative tool for simultaneous wheel and rail damage evaluation
Faiso Balino, Lorena Marin, Martina Meacci, Enrico Meli, Andrea Rindi, Zhiyong Shi, Jiangpeng Zhao, Wenbing Pan

17:00

Driver interventions in critical situations during automated driving
Thang Nguyen, Steffen Muller

Recent advancements in continuous wheel slip control
Dmitry Savitski, Weinian Wan, Klaus Augsburg, Bayrak Shyshou, Hisashi Fujimoto

Impact of track health on vehicle-track interaction loads
Caterina Arduini, Atto Eka, Riccardo Verardi

17:30

Coffee break

18:30

IAVSD Banquet at Kajalj II
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<td>Uncertainty quantification in vehicle dynamics</td>
<td>Main Hall</td>
<td>Simon Iwnicki</td>
<td>Christine Funfschilling, Guillaume Perrin, <em>State of the Art paper: 10.1080/00423114.2019.1601745</em></td>
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<td>09:30</td>
<td>Influence of system dynamics in brake blending strategies for electric vehicles</td>
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<td>Javier Pérez Fernández</td>
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<td>Which parameters determine the type of bogie hunting bifurcation?</td>
<td>Main Hall</td>
<td>Oldrich Polach, Jovio Vuitton</td>
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<td>11:00</td>
<td>Road 51 - Handling dynamics III</td>
<td>Main Hall</td>
<td>Jochen Rauh</td>
<td>Evaluation of frequency response characteristics on &quot;g-g&quot; planes by using of quasi-steady-state analysis. Takatochi Tsukano, Yoshio Kano, Makoto Yamakado, Masato Abe</td>
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<td>Design of an improved robust active trailer steering controller for a multi-trailer articulated heavy vehicle using SIL/HiL</td>
<td>Main Hall</td>
<td>Mutaz Keldani, Yuping He</td>
<td>Simulation of track-locomotive interactions in the longitudinal direction. Qing Wu, Yan Sun, Maksym Spiryagin, Colin Cole</td>
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<td>The significance of roll on dynamics of ground vehicles subjected to crosswind gusts by two-way coupled simulation of aero- and vehicle dynamics</td>
<td>Main Hall</td>
<td>Tural Tunay, Ciarán J. O’Reilly, Lars Drugge</td>
<td>Rail vehicle dynamics simulation-based decision support for novel block brake material implementation in Sweden. Carlos Casanueva, Bobette Dirks, Tohnny Baudot</td>
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<td>Awards and closing ceremony - Main hall</td>
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