

Reifen-Fahrwerk-Fahrbahn

VDI-Berichte Volume 2438

Benningen, Germany
11-12 September 2024

ISBN: 979-8-3313-1462-0

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.

Copyright© (2024) by VDI Verlag GmbH
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact VDI Verlag GmbH
at the address below.

VDI Verlag GmbH
VDI Platz 1
40468
Dusseldorf, Germany

Phone: 49 211 61 88-560
Fax: 49 211 61 99-97560

www.vdi-nachrichten.com

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

Inhalt/Content

7 Keynotes

- From “W” cycle to “V” cycle
How do we increase the confidence in the virtual simulation techniques? 1
N. Pathak, Michelin, Clermont-Ferrand, France

7 Simulation and Testing Methods

- A Proposal for Automated Safety Goal Derivation Using the Example
of Chassis Related Hazards 3
M. Perner, M. Levers, F. Matthies, W. Han, T. Wieczorek, S. Wiegand,
IAV GmbH, Gifhorn
- Potential of Machine Learning Methods for a Pure Virtual Development
of Tire- and Chassis Components 19
C. Cramer, M. Neumann, Leibniz Universität Hanover
- Objective Evaluation of Tire Properties: A Novel Interpretation of
NHTSA’s Dynamic Rollover Fishhook Test for Scale-Based Classification
of Rollover Criticality 33
C. Ludwig, G. Prokop, TU Dresden;
T. Landsiedel, AUDI AG, Ingolstadt

7 Steering Feedback and Behavior

- A Novel Simulator Setup: Influence of FTire Dynamics on
Accurate Steering Behavior 45
M. Becker, K. Jörg, MdynamiX AG, Munich;
B. Rieff, cosin scientific software AG, Munich
- Lenkungsrückmeldung im dynamischen Fahr Simulator:
Der Einfluss von Lenkradvibration und Fahrzeugbewegung 59
M. Böhle, Hochschule Kempten, Kempten;
B. Schick, MdynamiX AG, Benningen;
S. Müller, Technische Universität Berlin

7 Indoor Testing

Concepts for Optimizing Indoor Tire Abrasion Tests on Sandpaper 75

G. Leister, twms-consulting, Massenbachhausen;
S. Parthibhan, E. P. De Reuben, MRF Limited, Chennai, India
M. Winter, Kokusai Europe GmbH, Frankfurt am Main

Predicting tire performance on asphalt from indoor measurements 93

M. Furlan, H. Olsson, M. Strang, E. Ackerman, Calspan Corporation, Buffalo NY, USA

7 Driving Dynamics and Micromobility

Design Process of an Evolutionary Chassis System for an Experimental Microcar 109

T. F. Böse, KIT-ICM, Karlsruhe; J. Kesten, KIT-ETI, Karlsruhe

Advanced Chassis and Vehicle Dynamics Control of the EDAG CityBot A multifunctional Autonomous Robot Vehicle 123

J. Grötzinger, EDAG Engineering GmbH, Böblingen;
D. Jekel, EDAG Engineering GmbH, Munich

Innovative test and simulation methods for very light electric vehicles 133

A. Daberkow, V. Barske, M. Aydogmus, Heilbronn University

7 Simulation and Testing Methods

Information Fusion for Road Friction Estimation 147

J. King, ZF Friedrichshafen AG, Friedrichshafen

Potentials and possibilities of using the physical tire model CDTire/3D in the derivation of tire envelopes in vehicle development 149

F. Calabrese, C. Burkhart, A. Gallrein, M. Bäcker, Fraunhofer-Institut für Techno- und Wirtschaftsmathematik ITWM, Kaiserslautern;
G. Leister, twms-consulting, Massenbachhausen

Vehicle Motion Management

Mastering Vehicle Dynamics Control by Releasing Symbiotic Potential 169

M. Wielitzka, J. Rawitzer, J. Schrader, IAV GmbH, Gifhorn



NVH optimization at chassis level using test bench data considering necessary corrections for coupling forces and moments

179

O. Uszynski, C. Schliephake, D. Werner, RWTH Aachen University;
D. Hagen, D. Wegener, fka GmbH, Aachen

7 Chassis Design

Weight Reduction Strategies for Chassis Systems

193

T. Küppers, Ford Werke GmbH, Cologne;
T. Schmitz, Technische Hochschule Ulm