



# **BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS**

*FACULTY OF TRANSPORTATION ENGINEERING  
AND VEHICLE ENGINEERING*

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## **15TH MINI CONFERENCE ON VEHICLE SYSTEM DYNAMICS, IDENTIFICATION AND ANOMALIES**

7 - 9 NOVEMBER, 2016  
BUDAPEST, HUNGARY



## **CONFERENCE PROGRAM**

Conference WEB site:  
[www.vsdia.bme.hu](http://www.vsdia.bme.hu)

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**2016 - The VSDIA Conference Series  
is 28 Years Old**

## **15th MINI CONFERENCE ON VEHICLE SYSTEM DYNAMICS, IDENTIFICATION AND ANOMALIES**

to be held in **Budapest, Hungary**, at the **Faculty of Transportation Engineering and Vehicle Engineering** of the **Budapest University of Technology and Economics (BME)** between 7 and 9 November, 2016.

*President of the Conference:*

**Prof. István ZOBORY** (Hungary)

*International Scientific Committee:*

**Prof. Masato ABE** (Japan)

**Prof. Stefano BRUNI** (Italy)

**Prof. József BOKOR** (Hungary)

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**Prof. Gottfried SACHS** (Germany)

**Prof. Yoshihiro SUDA** (Japan)

**Dr. Pierre-Olivier VANDANJON** (France)

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*Organising Committee:*

**Prof. András SZABÓ** Head of Railway Group

**Prof. József CSIBA** Head of Railway Certification

**Prof. Gergely TULIPÁNT** Associate Professor

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**Hungarian Transport Association**

**GRAMPET Wagon Factory Ltd.**

**AVL Autokut Ltd.**

# 15th MINI CONFERENCE ON VEHICLE SYSTEM DYNAMICS, IDENTIFICATION AND ANOMALIES

Conference Site:

**Budapest University of Technology and Economics (BME)**

**Conference Centre, Building (A),**  
Budapest, Egry József str. 20-22.

**Vehicle Engineering Building (J),**  
Budapest, Sztoczek str. 4-6.

*To approach:* Trams: 4, 6; Buses: 212

**Central Building (K),**  
Budapest, Műgyetem rkp. 3-9.

*To approach:* Trams: 18, 19, 41, 47, 49; Buses: 7, 86

The **five sessions** of the Conference are:

- **Plenary Session**
- **Session for Dynamics, Identification and Anomalies of Railway Vehicles**
- **Session for Dynamics, Identification and Anomalies of Road Vehicles**
- **Session for Dynamics, Identification and Anomalies of Aircraft and Ships**
- **Session for Vehicle Control Theory and Interdisciplinary Sciences**

The **official language** of the conference is **English**. The **participation fee is 150 € (45000.- Ft)**, which covers the costs of the *abstracts, preliminaries, conference reception, lunches and Proceedings*. The **Proceedings** will be published in English after the Conference and mailed to all participants.

The **participation fee should be paid in cash** at the registration desk of the Conference on arrival.

Lunches will be served in the University Cafeteria.

# First Day

**7 November, 2016**

- 9 00 - 14 00 : Registration of participants  
**Conference Centre, Bldg. A, ground floor**
- 12 30 : **LUNCH**  
**at the University Cafeteria**
- 14 00 : **PLENARY SESSION**  
**Conference Centre, Bldg. A, ground floor**  
**Chairman: I. ZOBORY (Hungary)**
- 14 00 - 14 05 : **ZOBORY, I. (Hungary)**  
**Presidential Opening Address**
- 14 05 - 14 25 : **POKORÁDI, L. ((Hungary)**  
Monte-Carlo Simulation of Maintenance Processes
- 14 30 - 14 50 : **VU, V. T. - SENAME, O. - DUGARD, L. - GÁSPÁR, P.**  
(France + Hungary)  
Optimal Selection Of Weighting Functions by Genetic Algorithms to Design H<sub>∞</sub> Anti-Roll Bar Controllers For Heavy Vehicles
- 14 50 - 15 15 : **SANDOVAL, O. F. - ZAVALAYOE, R. - RAMIREZ-MENDOZA, R.A. - FELIX, L.C. (Mexico)**  
Upward Automotive Suspension
- 15 20 - 15 45 : **COFFEE BREAK**
- 15 45 - 16 05 : **ZBOINSKI, K. - WOZNICA, P. (Poland)**  
Optimization of Railway Transition Curves for Different Curve Radii
- 16 10 - 16 20 : **VANDANJON, P-O. - BOSQUET, R. - COIRET, A. - GAUTIER, M.**  
(France)  
Identification of High-Speed Train Energy Consumption Model
- 16 25 - 16 45 : **MYAMLIN, S. V. (Ukraine)**  
Design of Rolling Stock for Prospective Operation Conditions
- 16 50 - 17 10 : **ZOBORY, I. (Hungary)**  
Irregular Brake Disc Wear Caused by Dynamically Non-Stable Running

18 00 :

**CONFERENCE PARTY**

**Danube Hall, Central Building K  
Budapest, Műgyetem rakpart 3-9  
1st floor, No 2.**



# Second Day

8 November, 2016

## SESSION FOR DYNAMICS, IDENTIFICATION AND ANOMALIES OF RAILWAY VEHICLES

Building J. floor 2, No 202

**Chairman: A. SZABÓ** (Hungary)

- 9 00 - 9 20 : **ZBOINSKI, K. - GOLOFIT-STAWINSKA, M.** (Poland)  
The Impact Of Suspension Parameters On Selected Features Of  
Bogies Dynamics In The Transition Curves
- 9 25 - 9 45 : **KOLONITS, F.** (Hungary)  
Axial Rubbing in Hub-Axle Press Fit Joint Due to Bending
- 9 50 - 10 10 : **MALATINSZKY, S.** (Hungary)  
Interoperability – Conformity Assessment of the Rolling Stock Sub-  
system, New Challenge and Expericeneress

10 15 - 10 45 : **COFFEE BREAK**

**Chairman: F. KOLONITS** (Hungary)

- 10 45 - 11 05 : **CSIBA, J.** (Hungary)  
Comparative Investigation of the Components Determining  
the Reliability of Railway Carriage Bogies Using Long Time  
SpanOperation Data
- 11 10 - 11 30 : **FERENCZ, P.** (Hungary)  
Lifetime Extension Possibilities of Stadler Bogie Force Trans-  
mission Elements on the Basis of Test Results
- 11 35 - 11 55 : **SZABÓ, A. - PARÁZSÓ, J.** (Hungary)  
Determination of the Dynamical Effect of The Wheel Flattening by  
Means of Simulation Method

12 15 - 12 25 : **CONFERENCE PHOTO**  
**In Front of Bldg. J**

12 25 - 14 00 : **LUNCH**  
**at the University Cafeteria**

AFTERNOON SESSION, Room J202

**Chairman: J. CSIBA (Hungary)**

14 00 - 14 20 : **VÉGH, L.** (Hungary)

Derailment Dynamics of Railway Freight Cars

14 25 - 14 45 : **BIONDA, I. - BRAGHIN, F. - CAZZULANI, G. -  
DI GIALLEONARDO, E. - RESTA, F.** (Italy)

Homologation Tests of ETR1000-V300ZEFIRO Train up to 350 km/h

14 50 - 15 10 : **MANASHKIN, L. A. - MYAMLIN, S. V. - FYODOROV, E. F.**  
(Ukraine)

Measuring Development of Vertical Forces in Freight Car Bogies

15 15 - 15 45 : **COFFEE BREAK**

15 45 - 16 10 : **KEBAL, I. - MYAMLIN, S. S.** (Ukraine)

New Elements and Dynamics of Gondola Car

16 15 - 16 35 : **MANASHKIN, L. A. - MYAMLIN, S. V.- TITOV, S. S. -  
BESARAB, D.** (Ukraine)

Simulation of Freight Car Draft Gear Shock Absorber



**SESSION FOR DYNAMICS, IDENTIFICATION AND ANOMALIES  
OF ROAD VEHICLES**

**Building J. floor 2, No 207**

**Chairman: ZS. SZALAY (Hungary)**

- 9<sup>00</sup> - 9<sup>20</sup> : **NYERGES, Á. - NÉMETH, H.** (Hungary)  
Control Oriented Modelling of an Intake Throttle and Exhaust  
Brake Supported Lp Egr on a Mdd Engine
- 9<sup>25</sup> - 9<sup>45</sup> : **QUATTROMANI, G. - ROCHI, D. - SABBIONI, E. - SALATI, L. -  
SCHITO, P.** (Italy)  
Comparison of Different Approaches for Analysing Cross-Wind Ef-  
fects on High Sided Vehicles Passing by a Bridge Tower
- 9<sup>50</sup> - 9<sup>10</sup> : **SZALAY, ZS.** (Hungary)  
Structure and Architecture Problems of Autonomous Road  
Vehicle Testing and Validation
- 10<sup>15</sup> - 10<sup>45</sup> : **COFFEE BREAK**
- 10<sup>45</sup> - 11<sup>05</sup> : **KOKREHEL, CS. - NÉMETH, H.** (Hungary)  
Validation of an Agricultural Drive Axle Lubrication Model
- 11<sup>10</sup> - 11<sup>30</sup> : **KIVUGO, A. - TASORA, A. - BRAGHIN, F.** (Italy)  
Estimation of the Slip Ratio, Slip Sinkage, Slip Velocity and Traction  
of the Rigid Wheel in Deformable Terrain
- 12<sup>15</sup> - 12<sup>25</sup> : **CONFERENCE PHOTO  
In Front of Bldg. J**
- 12<sup>25</sup> - 14<sup>00</sup> : **LUNCH  
at the University Cafeteria**





**SESSION FOR DYNAMICS, IDENTIFICATION AND ANOMALIES  
OF AIRCRAFT AND SHIPS**

**Building J. floor 2, No 208**

**Chairman: H. G. REIMERDES (Germany)**

9 00 - 9 20 : **TÓBIÁS, CS. - VERESS, Á.** (Hungary)

Advanced Flow Modelling in Engine Intake Manifold by means of  
Coupled Analysis of GT-Suite and ANSYS Fluent

9 25 - 9 45 : **ZARE, F. - VERESS, Á.** (Iran + Hungary)

Novel Application of Inverse Design Method By Means of Redesign-  
ing Compressor Stator Vanes In A Research Jet Engine

9 50 - 10 10 : **GÁTI, B.** (Hungary)

Development of an Innovativ UAV Launcher

10 15 - 10 45 : **COFFEE BREAK**

10 45 - 11 05 : **HARGITAI, CS.** (Hungary)

New Added Mass Calculation for Inland Vessels

12 15- 12 25 : **CONFERENCE PHOTO  
In Front of Bldg. J**

12 25 - 14 00 : **LUNCH  
at the University Cafeteria**



**SESSION FOR VEHICLE CONTROL THEORY AND  
INTERDISCIPLINARY SCIENCES**

**Building J. floor 2, No 210**

**Chairman: P. GÁSPÁR (Hungary)**

- 9 00 - 9 20 : **FÉNYES, D. - NÉMETH, B. - GÁSPÁR, P.** (Hungary)  
Control-Oriented Modeling of the Variable-Geometry Suspension for Independent Steering Purposes
- 9 25 - 9 45 : **SÁBITZ, L. - ZOBORY, I.** (Hungary)  
Sliding Friction Coefficient and Wear Multiplier as Functions of the Tribological State-Vector
- 9 50 - 10 10 : **TÓBIÁS, CS. - VERESS, Á.** (Hungary)  
Application of Functional Mock-up Units in Design and Development of Vehicle System Components
- 10 15 - 10 45 : **COFFEE BREAK**
- 10 45 - 11 05 : **SZŐKE, D. - ZOBORY, I.** (Hungary)  
Dynamical Characteristics of Crank Mechanisms
- 11 10 - 11 30 : **KEHRER, K. - GUROL, S. - JETER, PH.** (USA)  
Linear Drives for Vehicles
- 12 15 - 12 25 : **CONFERENCE PHOTO**  
**In Front of Bldg. J**
- 12 25 - 14 00 : **LUNCH**  
**at the University Cafeteria**



# Third Day

9 November, 2016

## SESSION FOR DYNAMICS, IDENTIFICATION AND ANOMALIES OF RAILWAY VEHICLES

Conference Centre, Bldg. A, ground floor

**Chairman: L. OROSZVÁRY** (Hungary)

9 00 - 9 20 : **ZOBORY, I. - NAGY, D.** (Hungary)

Dynamical Analysis of Railway Traction Units Equipped with Special Anti Skid Device

9 25 - 9 45 : **LEONARDI, F. - ALFI, S. - BRUNI, S.** (Italy)

The Application of Kalman Filtering Estimation to the Condition Monitoring of the Geometric Quality of the Railway Track

9 50 - 10 10 : **ZOLLER, V.** (Hungary)

Dynamics of the Train/ Track System in the Presence of Continuously Varying, Fourier Transformable Viscoelastic Parameters of the Subgrade

10 15 - 10 45

**COFFEE BREAK**

**Chairman: T. BENEDEK** (Hungary)

10 45 - 11 05 : **BIONDA, S. - CAZZULANI, G. - DI GIALLEONARDO, E. - BRAGHIN, F.** (Italy)

Improvements of the Estimation of Wheel-Rail Contact Forces Using Instrumented Wheel-sets

11 10 - 11 30 : **TULIPÁNT, G. – SZABÓ, A.** (Hungary)

Sound- and Vibration Analysis in the Operation of Metro Vehicles

11 35 - 11 55 : **RAICOV, O. – VETRO, I.** (Romania)

The Impact of EN13749 Requirements on the Fatigue Strength Design of Freight Bogies

12 00 - 14 00 :

**LUNCH**

**at the University Cafeteria**



14 00 :

**CLOSING PLENARY SESSION**

**Chairman: I. ZOBORY** (Hungary)

**Closing Address, *FAREWELL DRINK***

# CAMPUS

of the

## Budapest University of Technology and Economics (BME)

