



**BUDAPEST UNIVERSITY OF
TECHNOLOGY AND ECONOMICS**

*FACULTY OF TRANSPORTATION ENGINEERING
AND VEHICLE ENGINEERING*

**17TH MINI CONFERENCE ON
VEHICLE SYSTEM DYNAMICS,
IDENTIFICATION AND ANOMALIES**

9 - 11 NOVEMBER, 2020
BUDAPEST, HUNGARY

VSDIA 2020

PRELIMINARY PROGRAM

Conference WEB site:
www.vsdia.bme.hu

**2020 - The VSDIA Conference Series
is 32 Years Old**

17th 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 9 and 11 November, 2020.

President of the Conference:

Prof. István ZOBORY (Hungary)

International Scientific Committee:

Prof. Masato ABE (Japan)

Prof. Stefano BRUNI (Italy)

Prof. József BOKOR (Hungary)

Prof. Otmar KRETTEK (Germany)

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Mr. Péter FERENCZ Assistant Lecturer

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17th MINI CONFERENCE ON VEHICLE SYSTEM DYNAMICS, IDENTIFICATION AND ANOMALIES

Conference Site:

Budapest University of Technology and Economics (BME)

***Conference Centre, Building (A),
Budapest, Egrý 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 € (52000.- 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

9 November, 2020

- 9 00 - 11 00 : Registration of participants
Conference Centre, Bldg. A, ground floor
- 11 00 : **PLENARY SESSION**
Conference Centre, Bldg. A, ground floor
Chairman: I. ZOBORY (Hungary)
- 11 00 - 11 05 : **ZOBORY, I. (Hungary)**
Presidential Opening Address
- 11 05 - 11 25 : **COSTA, E. – PHAM, T.P. – SENAME, O. – TRAN, G.Q.B - DO, T.T. – GÁSPÁR, P. (France + Hungary)**
Definition of a Reference Speed of an Autonomous Vehicle with a Comfort Objective
- 11 30 - 11 50 : **CAO, H. – ZÖLDY, M. (Hungary)**
Path Planning for Autonomous Vehicle in Roundabouts
- 12 00 : **LUNCH**
at the University Cafeteria
- 14 00 : **AFTERNOON PLENARY SESSION**
Conference Centre, Bldg. A, ground floor
Chairman: I. ZOBORY (Hungary)
- 14 05 - 14 25 : **PATAKI, M – SZALAY, ZS. – TIHANYI, V. A. (Hungary)**
Development of an Advanced Test Scenario for Autonomous Braking System Preventing Accidents
- 14 30 - 14 50 : **LUKACS, J. – TÖRÖK, Á. (Hungary)**
Sugeno-Type Fuzzy Based Predictive Model for Interior Noise Level Estimation
- 14 55 - 15 15 : **MEINERT, T. – DAFNIS, A. – SCHRÖDER, K.U. (Germany)**
UpBUS – Electrical, Transmodular Bus for a Seamless Public Transport System

15 20 - 15 45 : **COFFEE BREAK**

15 45 - 16 05 : **JAKAB, J – BALAJTI, R. – KISS, D. – SZIGETVÁRI, M. –
DEMUS, T. – VERESS, Á.** (Hungary)

Numerical Modelling and Analysis of an Air Dryer Unit

16 10 - 16 30 : **FARKAS, A.** (Hungary)

Non-linear Models of Certain Data Perturbations of Input
Spectral Density Matrices

16 35 - 16 55 : **ZOBORY, I.** (Hungary)

Longitudinal Dynamics of Trains when Passing through the
Entrance Turn-Out Zone of a Station

18 00 : **CONFERENCE PARTY**

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



Second Day

10 November, 2020

SESSION FOR DYNAMICS, IDENTIFICATION AND ANOMALIES
OF RAILWAY VEHICLES
Building J. floor 2, No 202

Chairman: J. CSIBA (Hungary)

- 9 00 - 9 20 : **ZOLLER, V.** (Hungary)
On Track-Vehicle Problems Containing Generalized Beams
and Foundations
- 9 25 - 9 45 : **SZABÓ, A.** (Hungary)
Numerical Stability Analysis for Increasing the Critical Speed
Limit of EMUs
- 9 50 - 10 10 : **ZÁBORI, Z. – ZOBORY, I.** (Hungary)
Dynamical Investigation into the Derailment Process of a
Railway Wheel-set Running in a Curve

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

Chairman: O. KRETTEK (Germany)

- 10 45 - 11 05 : **FERENCZ, P.** (Hungary)
Analysis Aspects of Vertical Dynamics for Implementation in
Simulation Methods to Assess Influences of Secondary Suspen-
sion System Anomalies on Wheel Profile Wear
- 11 10 - 11 30 : **YE, Y. – SHI, D. – HECHT M.** (Germany)
An Automatic Correction Strategy for Wear Prediction of
Railway Wheels
- 11 35 - 11 55 : **NEMETH, I.** (Hungary)
Vibration of Disc-Brake Systems – Analysis and Attenuation

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: A. SZABÓ (Hungary)

14 00 - 14 20 : **KRETTEK, O.** (Germany)

How the Weather influences Vehicle Dynamics

14 25 - 14 45 : **MALATINSZKY, S.** (Hungary)

Conformity Assessment of a Modernised Locomotive Bogie
and Body Connection – Type Tests and Results

14 50 - 15 10 : **SZŐKE, D.** (Hungary)

On Structure and Parameter Analysis of the Vibratory Sys-
tem Railway Track and Vehicle

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



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

Building J. floor 2, No 207

Chairman: ZS. SZALAY (Hungary)

- 9⁰⁰ - 9²⁰ : **PETHŐ, ZS.** (Hungary)
Introduction of a Case Study in the Field of Vehicular Cyber-security
- 9²⁵ - 9⁴⁵ : **VINCZE, ZS.** (Hungary)
Object Tracking in Lidar Point
- 9⁵⁰ - 9¹⁰ : **TÓTH, B. – SZALAY, Zs. – TIHANYI, V.** (Hungary)
Validation of Virtual Testing Environments for Highly Automated Functions and Automated Driving Using Co-Simulation

10¹⁵ - 10⁴⁵ : **COFFEE BREAK**

Chairman: H. NÉMETH (Hungary)

- 10⁴⁵ - 11⁰⁵ : **LENGYEL, H. – SZALAY, ZS.** (Hungary)
Collection of Adapting Naturalistic Driving Behaviour Parameters for ADAS Systems Development
- 11¹⁰ - 11³⁰ : **DOMINA, Á. – TIHANYI, V.** (Hungary)
Path Following Control Solutions for Autonomous Ground Vehicles
- 11³⁵ - 11⁵⁵ : **HEGEDŰS, T. – NÉMETH, B. – GÁSPÁR, P. – SENAME, O.**
(Hungary + France)
Motion Prediction Based Decision Making Algorithm for Autonomous Vehicles

12¹⁵ - 12²⁵ : **CONFERENCE PHOTO**
In Front of Bldg. J

12²⁵ - 14⁰⁰ : **LUNCH**
at the University Cafeteria

AFTERNOON SESSION, Room J207

Chairman: G. MELEGH (Hungary)

14 00 - 14 20 : **GYURKÓ, Z. – LINDENMAIER, L. – SZAPPANOS, A. –
NÉMETH, H.** (Hungary)

Estimation of Vehicle Dynamics for Automated Commercial
Vehicles

14 25 - 14 45 : -

14 50 - 15 10 : -

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



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

Building J. floor 2, No 208

Chairman: Á. VERESS (Hungary)

9 00 - 9 20 : **GAUSZ, T. – GÁTI, B.** (Hungary)
Applied Airfoil Aerodynamics

9 25 - 9 45 : **MIRAGAZADE, M. – VERESS, Á.** (Hungary)
Aerodynamic Drag Reduction for Commercial Vehicles

9 50 - 10 10 : **BENEDA, K.** (Hungary)
Identification and Control Design of Shaft Power Micro Gas
Turbine Engine for Full Authority Digital Electronic Control

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

Chairman: T. GAUSZ (Hungary)

10 45 - 11 05 : **HADHÁZI, D.** (Hungary)
Theoretical Concept Design of a Potential Stability and Ma-
noeuvre Control On-Board Device for Escort Tugs Using Re-
al Time Measured Operational Technical Information

11 10 - 11 30 : **HARGITAI, CS.** (Hungary)
Added Mass Experimental Determination of 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 : **DO, T.T. – SENAME, O. – DUGARD, L. – PHAM, T.P. – DO, M.H. – VU, V.T. – PHAM, T.T. – PHAM, Q.T.** (Vietnam+France)
Road Adaptation for Semi-Active Suspension System Using Robust Control Method

9 25 - 9 45 : **FÉNYES, D. – NÉMETH, B. – GÁSPÁR, P. – SENAME, O.**
(Hungary + France)
Data-Driven Control Design for Semi-Active Suspension

9 50 - 9 10 : **ACHNIB, A. – SENAME, O.** (France)
Discrete-Time Robust Preview Control of Uncertain Semi-Active Suspension Systems

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

Chairman: O. SENAME (France)

10 45 - 11 05 : **BASANGAN, H. – MIHÁLY, A. – GÁSPÁR, P. – SENAME, O.** (France + Hungary)
Integrated Cruise Control and Semi-active Suspension Control for Autonomous Vehicle Based on Look-Ahead Information

11 10 - 11 30 : **PHAM, Q.T. – SENAME, O. - DUGARD, L. – PHAM, T.P. – DO, M.H. – VU, V.T. – PHAM, T. T. – DO, T. T.**
(Vietnam +France)
LQR Controller Design For An Active Anti-Roll Bar System Of Single-Unit Heavy Vehicles

11 35 - 11 55 : **FAZEKAS, M. – GÁSPÁR, P. – NÉMETH, B.** (Hungary)
Vehicle Models in the Wheel Odometry-Based Localization

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

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

AFTERNOON SESSION (A-CONTROL), Room J210

Chairman: Z. SZABÓ (Hungary)

14 00 - 14 20 : **TRAN, G.Q.B. – SENAME, O. – GÁSPÁR, P. – NÉMETH, B. – COSTA, E.** (Vietnam + France + Hungary)
Adaptive Speed Control of an Autonomous Vehicle with a Comfort Objective

14 25 - 14 45 : **ZOLTÁN, A. – NÉMETH, B.** (Hungary)
Application Possibilities of Augmented Reality in the Simulation of Automated Vehicle Systems

14 50 - 15 10 : **SZILASSY, P. - NÉMETH, B.** (Hungary)
Design of Speed Control for Automated Vehicles in Intersections with Varying Speed Zones

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

AFTERNOON SESSION (B-INTERDISCIPLINARY), Room J208

Chairman: G. TULIPÁNT (Hungary)

14 00 - 14 20 : **VENCZEL, M. – VERESS, Á.** (Hungary)
Analysis and Improvement of Filling Process for Viscous Torsional Vibration Damper

14 25 - 14 45 : **VENCZEL, M. – VERESS, Á.** (Hungary)
Investigating the Effect of Thixotropy in Silicone Oils onto the Dynamic Viscosity Measurement

14 50 - 15 10 : **VENCZEL, M. – VERESS, Á.** (Hungary)
Effect of AK 1000000 Silicon Oil Thixotropy on Dynamic Viscosity

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



Third Day

11 November, 2020

SESSION FOR DYNAMICS, IDENTIFICATION AND ANOMALIES OF RAILWAY VEHICLES

Conference Centre, Bldg. A, ground floor

Chairman: L. OROSZVÁRY (Hungary)

9 00 - 9 20 : **CSIBA, J.** (Hungary)

Investigation into the Reliability of Railway Bogies

9 25 - 9 45 : **M-SZÚCS, M.** (Hungary)

Operational Reliability Improvement Possibilities of Diesel Locomotive Fleet with Limited Low Quantity Items

9 50 - 10 10 : **SHI, D. – Ye, Y. – GILLWALD, M. – HECHT, M.** (Germany)

Generating Reality-Augmented Simulation Data for Fault Diagnosis of Rolling Stock

10 15 - 10 45

COFFEE BREAK

SESSION FOR VEHICLE CONTROL THEORY AND INTERDISCIPLINARY SCIENCES

Chairman: O. KRETTEK (Germany)

10 45 - 11 05 : **POKORÁDI, L.** (Hungary)

Sensitivity Analysis of Vehicle System's Reliability Block Diagram with Hierarchical Approach

11 10 - 11 30 : **KONCZ, A.** (Italy)

Transport Safety Testing of Lithium-ion Batteries and Their Risk Concerning Laboratory Environment during Tests

11 35 - 11 55 : **ZOBORY, I.** (Hungary)

On Stochastic Simulation of S-N Curves (Wöhler-Curves)

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)

