



EVROPSKÁ UNIE  
Evropský fond pro regionální rozvoj  
Operační program Podnikání  
a inovace pro konkurenceschopnost



FAKULTA  
DOPRAVNÍ  
CVUT V PRAZE



NÁRODNÍ TECHNOLOGICKÁ PLATFORMA  
Interoperabilita železniční infrastruktury  
CZECH TECHNOLOGY PLATFORM  
Interoperability of Railway Infrastructure

# Student Scientific Conference

## MODERN RAILWAYS FOR THE 21st CENTURY

### Project SGS – SVK 46/21/F6

#### ORGANISATIONAL FRAMEWORK:

Event Venue: Congress Centre - U Hájků, hotel Grandior, Na Poříčí 42, Prague 1

Language: Czech, English

Dates: 2. 6. 2021

Schedule: 09:00 to 10:00 Registration  
10:00 to 17:30 Lectures, forum of discussion

Organizer: Czech Technical University in Prague

Guarantor of the conference: doc. Ing. Pavel Hrubeš, Ph.D., the Dean of FTS CTU in Prague

#### PROGRAMME OF THE CONFERENCE:

09.00 – 10.00 REGISTRATION

10.00 Ing. Jaroslav Vašátko  
Opening the Conference

#### INVITED LECTURES

Moderator: doc. Ing. Vít Fábera, Ph.D.

10.00 – 10.20 doc. Ing. Josef Kolář, CSc. (ČVUT)  
MODERN RAILWAYS FOR THE 21<sup>st</sup> CENTURY – A CHALLENGE NOT ONLY FOR PROJECT ENGINEERS

10.20 – 10.40 doc. Dr. Ing. Roman Štěrba, MBA (SŽ)  
MODERNÍ ŽELEZNICE PRO 21. STOLETÍ

10.40 – 11.00 doc. Ing. Martin Leso, Ph.D. (ČVUT)  
ŽELEZNICE 4.0 - TECHNOLOGIE MODERNÍ ŽELEZNICE 21. STOLETÍ

11.00 – 11.30 COFFEE BREAK

#### SECTION A

11.30 – 11.50 Jiří Šlapák, Tomáš Michálek  
COMPARISON OF SELECTED PARAMETERS FOR EVALUATION OF RAIL SURFACE DAMAGE INTENSITY

11.50 – 12.10 Pavel Kulich, Otto Plášek  
RAILWAY TRACK DEFLECTION ANALYSIS BY USING EVOLUTIONARY ALGORITHMS

12.10 – 12.30 Pavel Krupík  
CONSTRUCTION 4.0 IN THE CONCEPT OF THE RAILWAY

12.30 – 12.50 Expert Discussion

12.50 – 13.50 LUNCH



## SECTION B

**Moderator:** Ing. Jaroslav Vašátko

**13.50 – 14.10** Vojtěch Dybala

KALKER'S COEFFICIENT  $c_{11}$  AND ITS INFLUENCE ON THE DAMPING AND THE RETUNING OF A MECHANICAL DRIVE TORSION SYSTEM OF A RAILWAY VEHICLE

**14.10 – 14.30** Jan Antoš

MATHEMATICAL METHODS TO SUPPORT RAILWAY ENERGY SIMULATION

**14.30 – 15.00** COFFEE BREAK

## SECTION C

**Moderator:** doc. Ing. Vít Fábera, Ph.D.

**15.00 – 15.20** Adam Hlubuček

DIGITAL TRACK MAP FOR THE VEXA EXPERT SYSTEM

**15.20 – 15.40** Jakub Seidl

ACCIDENT RATE OF REGIONAL RAILWAY VEHICLES AT RAILWAY CROSSINGS FOR THE YEARS 2014 TO 2018

**15.40 – 16.00** Jan Valehrach, Tomáš Říha, Jiří Vendel, Otto Plášek

THE LONG-PITCH CORRUGATION DEVELOPMENT IN SMALL RADII CURVES

**16.00 – 16.20** Jiří Vendel, Otto Plášek, Jan Valehrach, Tomáš Říha, Václav Mach

COMPREHENSIVE VERIFICATION OF THE BEHAVIOR OF THE CONTINUOUS WELDED RAIL ON THE BRIDGE

## FINAL SECTION

**Moderator:** doc. Ing. Vít Fábera, Ph.D.

**16.20 – 17.30** Expert Discussion

**17.30** CLOSE OF THE CONFERENCE