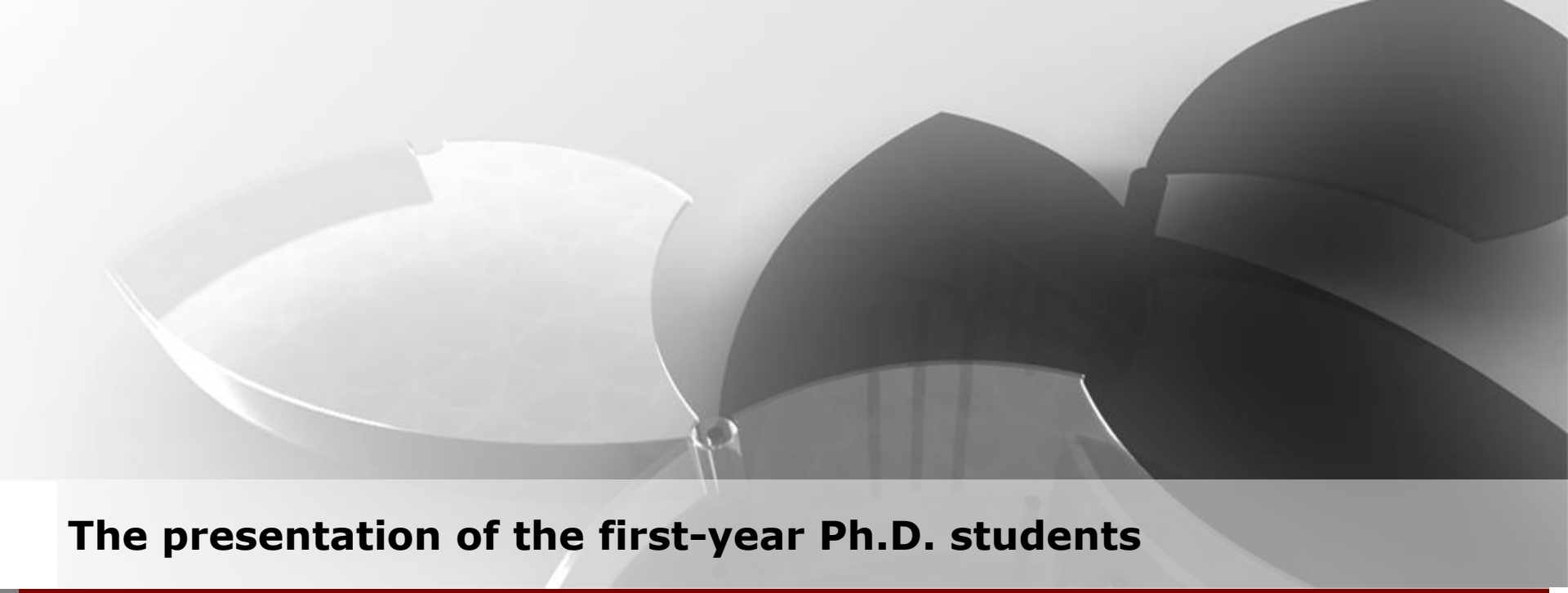

The presentation of the first-year Ph.D. students

Radovan Galas

Institute of Machine and Industrial Design

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Institute of Machine and Industrial Design
Faculty of Mechanical Engineering
Brno University of Technology

Presentation
2.10. 2013, FME BUT in Brno, Czech Republic

Content

- Introduction
- Master’s thesis
- Dissertation’s thesis
- Other activities
- Teaching and learning activities
- Future work

Introduce myself

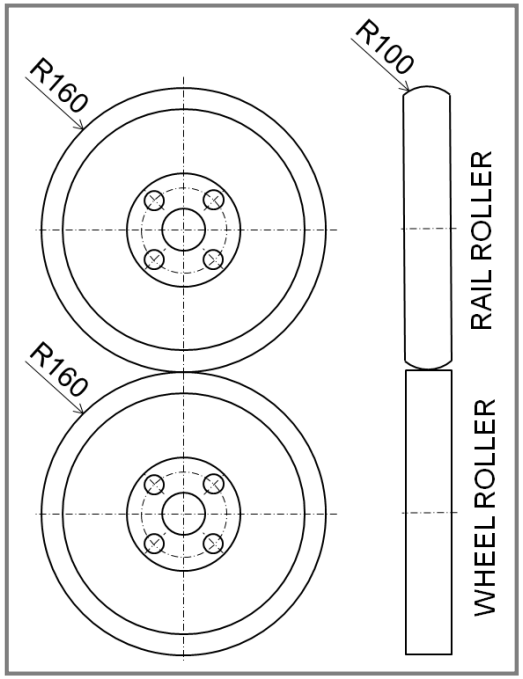
Education and academic qualification

- **2008-2011** **Bachelor's degree**, Brno University of Technology, Faculty of Mechanical Engineering, Mechanical Engineering
- **2011-2013** **Master's degree**, Brno University of Technology, Faculty of Mechanical Engineering, Institute of Machine and Industrial Design, Mechanical Engineering Design

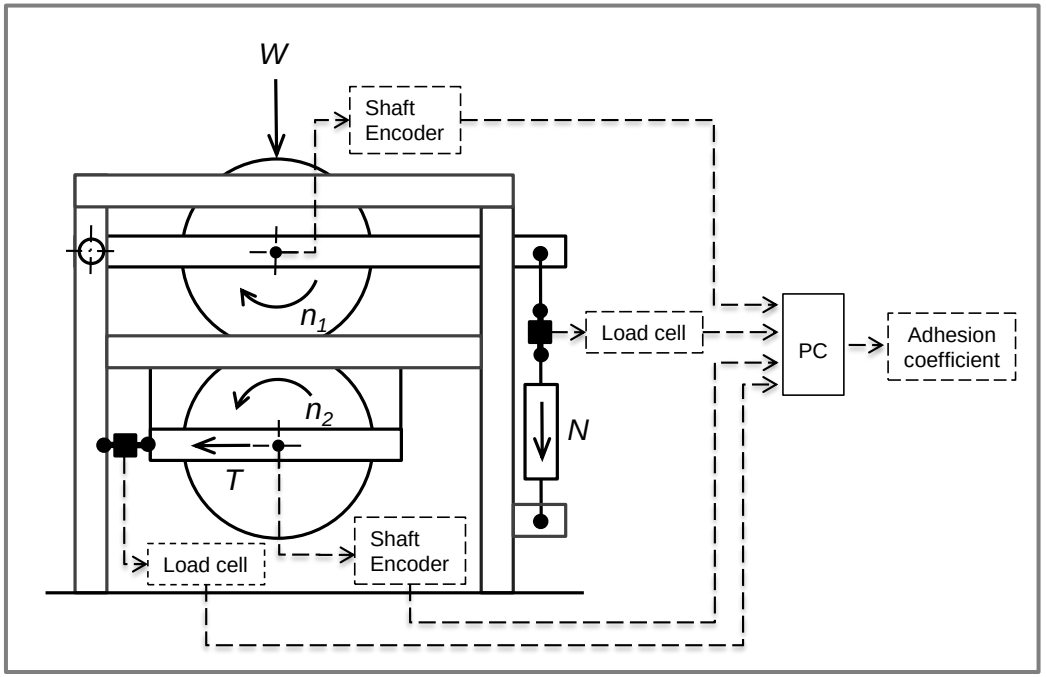
- Name of my master's thesis

DESIGN OF EXPERIMENTAL STAND FOR THE STUDY OF RAILWAY VEHICLES SANDING

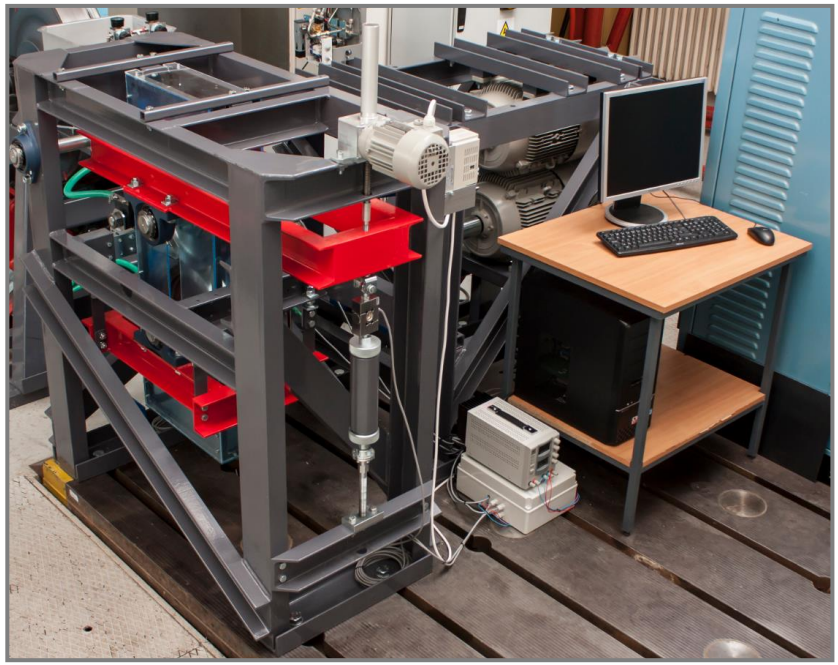
Connected to project TAČR – Research and develop of progressive sanding system for rail vehicle.



Contact between wheel and rail discs



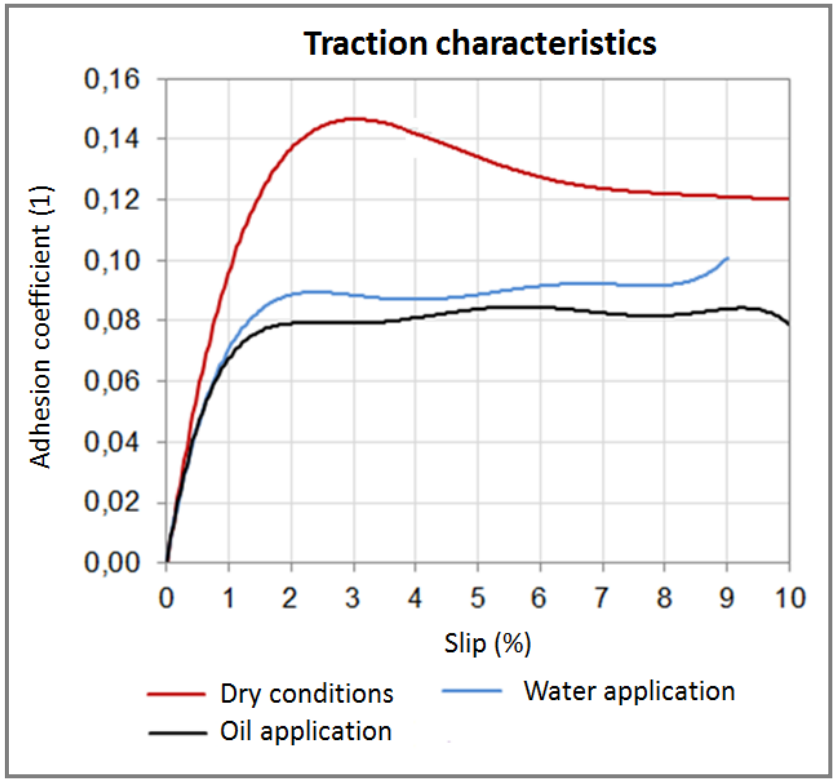
Schematic representation



Stand for the study of railway vehicles sanding

Operating regimes

	Operating regimes	
	Regime 1	**Regime 2**
Hertzian pressure	1 GPa	0,6 GPa
rolling speed	0 – 20 km/h	20 – 90 km/h
adhesion coefficient	max 0,7	max 0,7
slip	max 0,1	max 0,1



Verification experiments

Dissertation's thesis

- Name of my dissertation's thesis

Friction modification within wheel and rail contact

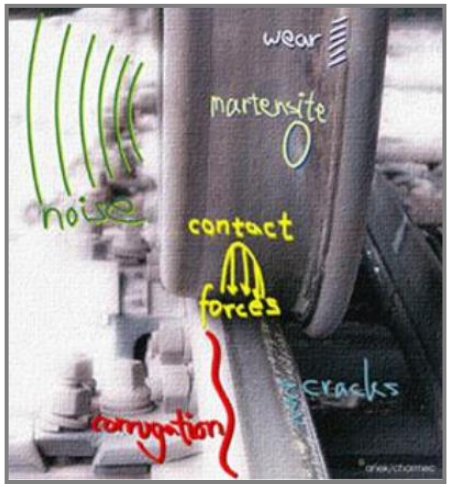
Friction management

Low friction	**Intermediate friction**	High friction
Low friction modifiers	High friction modifiers	Very high friction modifiers
Lubricants	TOR composite	Sand
μ=0,1	μ=0,4	μ=0,6

TOR (Top Of Rail) composite

- Reduction of wear, cracks, corrugation and noise
- Intermediate coefficient of friction

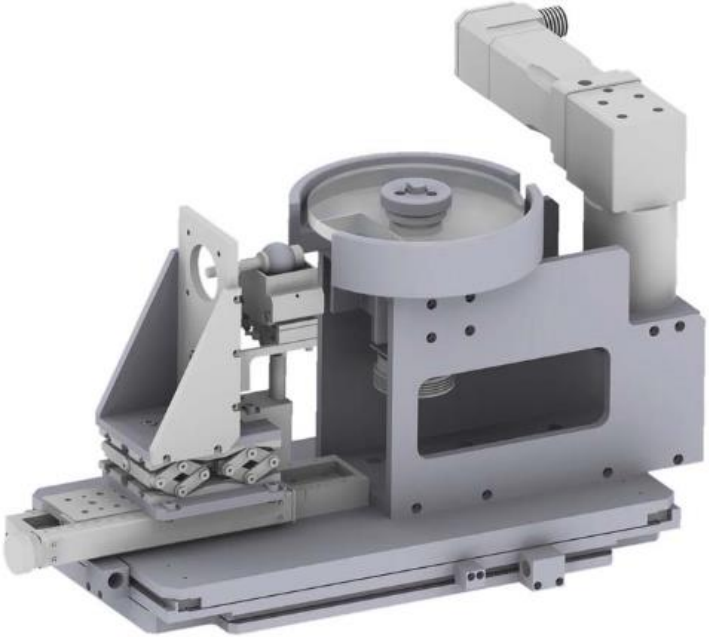
→ **Aim of thesis:** description of the behavior of TOR composit



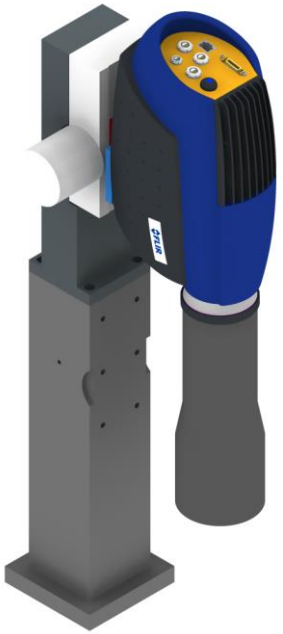
Wheel rail interface

Other activities

- Modification of optical tribometer for experimental study of lubricant film behavior under transient conditions
- Stand design for IR camera



Optical tribometer



Stand for IR camera

Teaching and learning activities

Teaching activities	Learning activities
Winter semester	
5KS (Machine Design – Machine Elements)	**9AJ** – in process (English for Doctoral Degree Study)
ZTR (Tribology)	**9MOP** (Methodologies of Scientific Work)
Summer semester	**9VPR** (Research Project and its Manag.)
6KT (Machine Design – Mechanical Drives)	**9EHD** (Elastohydrodynamics)
6KM (Machine Design – Mechanisms)	**9EXT** (Experimental Methods in Tribology)

Future work

- Literature overview
- Research aim/research plan
- Modification of twin-disc machine
- Experiments and analyses

Thank you for your attention

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