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

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Introduction - Previous studies

- **2008 – 2011**
  - Bc. in Mechanical Enginnering
- **2011 – 2013**
  - Ing. in Mechanical Engineering Design

- Faculty of Mechanical Engineering, Brno

- Institute of Machine and Industrial Design

Introduction - Diploma thesis

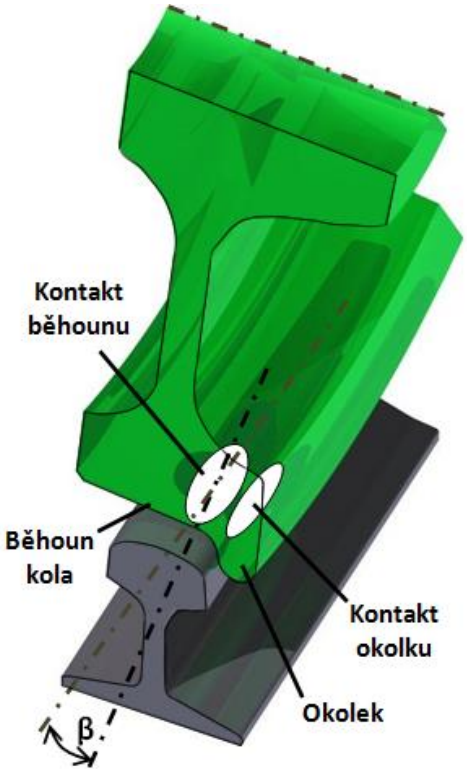
Title of thesis**:**

Experimental Study of Wheel Flange Lubrication

Supervisor: Ing. Milan Omasta

Aim of thesis:

Experimental determination of the influence of operating conditions (especially amount of grease) on the tribological aspects of the wheel flange/rail contact

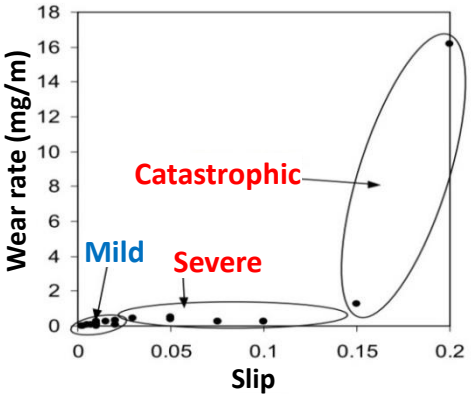


Wheel and rail contacts

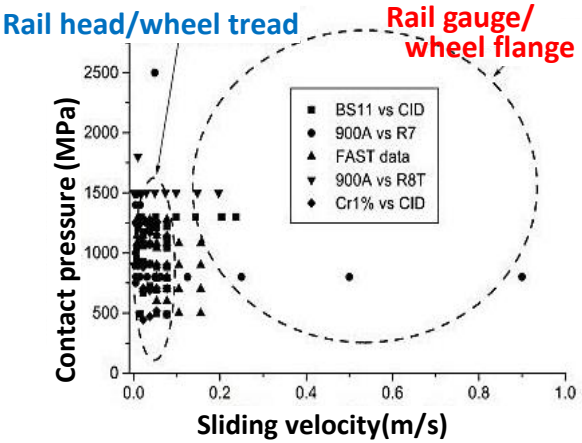
Introduction - Diploma thesis

Wear in dry wheel flange/rail contact

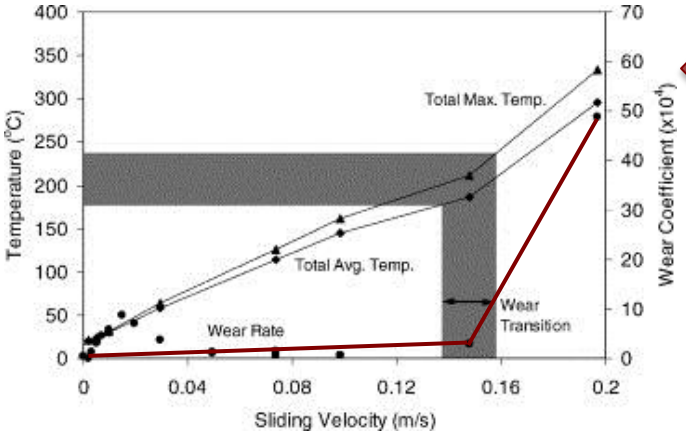
- Pin-on-disc and Twin-disc experiments
- Sudden transition from severe to catastrophic regime
- Scoring; Scuffing and Seizure phenomena



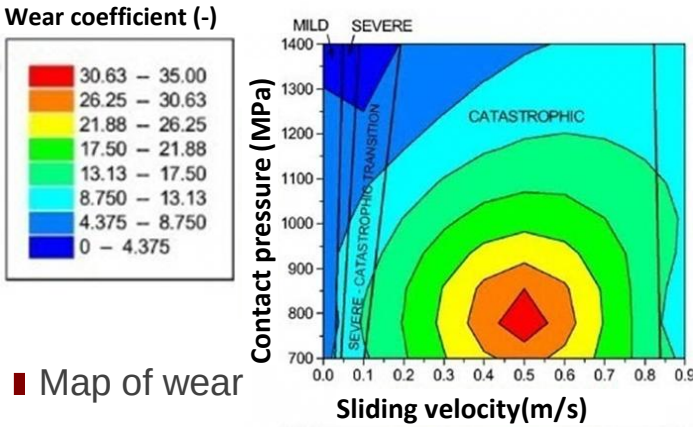
Regimes of wear



Overview of available studies



Temperature rise in contact



Map of wear

Source: LEWIS, OLOFSSON: Mapping rail wear regimes and transitions.

Introduction - Diploma thesis

Publications:

- OMASTA, M.; FRYZA, J.; HARTL, M.; KŘUPKA, I. An experimental approach to the study of rail wheel/flange lubrication, In STLE 2013 Annual Meeting & Exhibition, pp.1-3, ISBN 978-0-7918-????-?, (2013), Society of Tribologists and Lubrication Engineers.

- OMASTA, M.; FRYZA, J.; HARTL, M.; KŘUPKA, I. Study of Effects of Wheel Flange/Rail Gauge Contact Lubrication, In World Tribology Congress 2013, pp.1-3, ISBN 978-88-908185, (2013), Italian Tribology Association.

Current activities - Teaching and learning activities

Teaching and learning activities:

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

Future work - PhD thesis

Title of thesis**:**

Lubricated contacts in a vibration environment

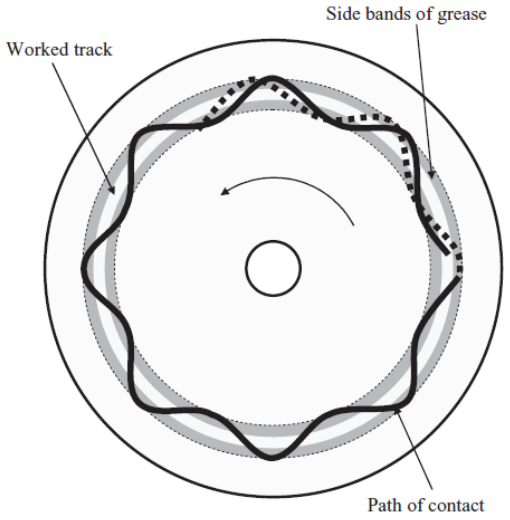
Supervisor: prof. Ing. Ivan Křupka, Ph.D.

Aim of thesis:

Study of the effect of vibrations (especially lateral) to behavior of lubricated contacts, particularly under elastohydrodynamic lubrication.

Future work:

- Literature overview
- Research aim/research plan



- Motion of contact relative to the disk

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Thank you for your attention

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