INTRODUCTION OF THE FIRST YEAR PhD STUDENT

Cheney Quinn, Ing.

INSTITUTE OF MACHINE AND INDUSTRIAL DESIGN
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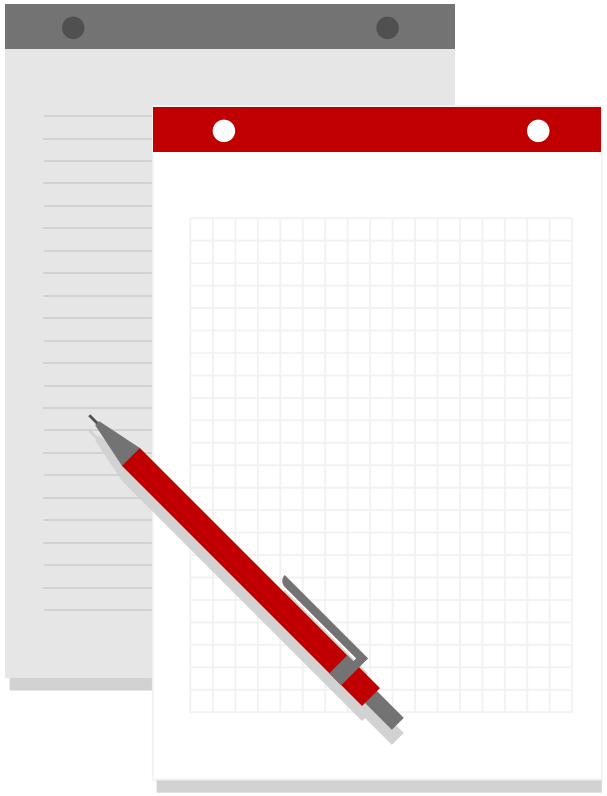
Brno University of Technology

6th October 2021

INSTITUTE OF MACHINE AND INDUSTRIAL DESIGN

CONTENT

- Where I‘m from
- Hobbies and Interests
- Education
- Master‘s thesis
- Dissertation
- Education activities



WHERE I‘M FROM…

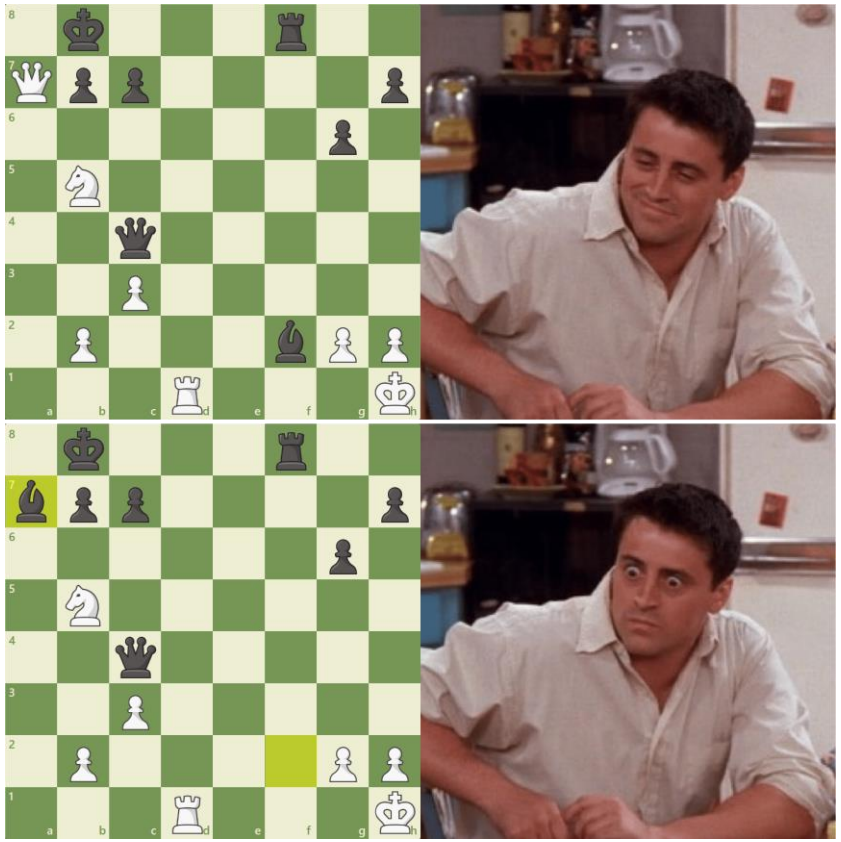
- Born in Peterborough, UK
  - Around 200 000 people
- Moved to Vlčnov, CZ
  - Around 3 000 people
  - Known for The Ride of The Kings

HOBBIES AND INTERESTS

- Folklore
  - Dancing in Folklore ensemble Vlčnovjan

HOBBIES AND INTERESTS

- Gym
- Chess
- Games
- Comedy
- Movies
- Music



EDUCATION

High school

- GJAK in Uherský Brod (2012-2016)

University

- Bachelor‘s degree (2016-2019)
  - Fundamentals of Mechanical Engineering, BUT FME

- Master‘s degree (2019-2021)
  - Mechanical Engineering, BUT FME

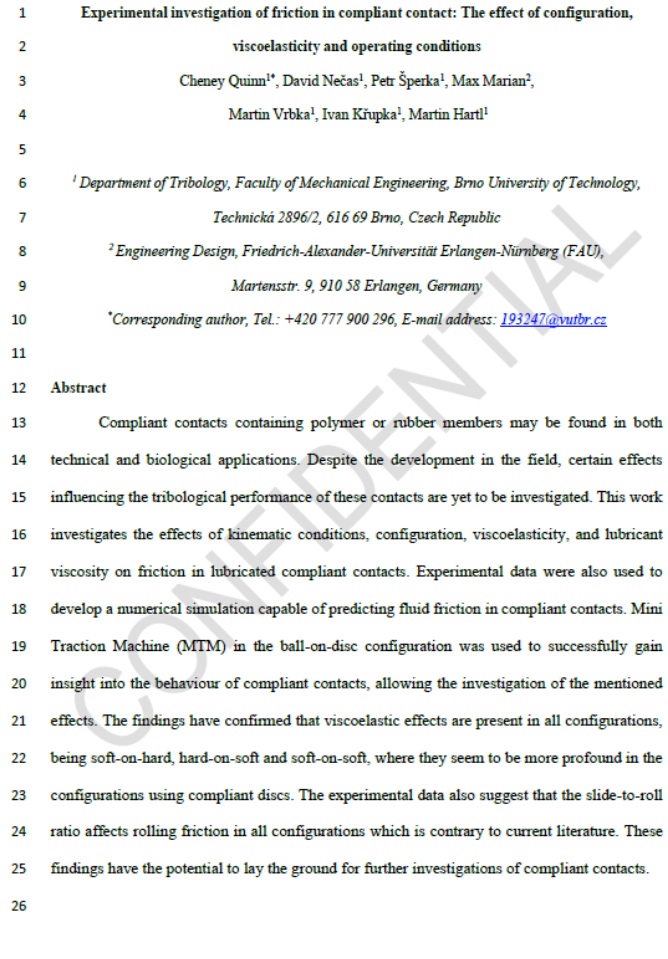
MASTER‘S THESIS

The effect of viscoelasticity and operating conditions on friction on compliant contacts

- Supervisor: Ing. David Nečas, Ph.D.
- Description of the effect of configuration
- Found that slide-to-roll ratio influences $\mu_{rolling}$

Manuscript

- **C. Quinn, D. Nečas, P. Šperka, M. Marian, M. Vrbka, I. Křupka, M. Hartl**
- Experimental investigation of friction in compliant contacts; The effect of configuration, viscoelasticity and operating conditions
- Under review at Tribology International



Experimental investigation of friction in compliant contact: The effect of configuration, viscoelasticity and operating conditions

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Abstract

Compliant contacts containing polymer or rubber members may be found in both technical and biological applications. Despite the development in the field, certain effects influencing the tribological performance of these contacts are yet to be investigated. This work investigates the effects of kinematic conditions, configuration, viscoelasticity, and lubricant viscosity on friction in lubricated compliant contacts. Experimental data were also used to develop a numerical simulation capable of predicting fluid friction in compliant contacts. Mini Traction Machine (MTM) in the ball-on-disc configuration was used to successfully gain insight into the behaviour of compliant contacts, allowing the investigation of the mentioned effects. The findings have confirmed that viscoelastic effects are present in all configurations, being soft-on-hard, hard-on-soft and soft-on-soft, where they seem to be more profound in the configurations using compliant discs. The experimental data also suggest that the slide-to-roll ratio affects rolling friction in all configurations which is contrary to current literature. These findings have the potential to lay the ground for further investigations of compliant contacts.

1

DISSERTATION

Extension of longevity of joint implants by targeted modification of rubbing surfaces

- Supervisor: doc. Ing. Martin Vrbka, Ph.D.
- Co-supervisor: Ing. David Nečas, Ph.D.

- Investigating the tribological mechanisms of textured joint replacements
- Considering the effects of material, lubricant rheology and composition, operating conditions

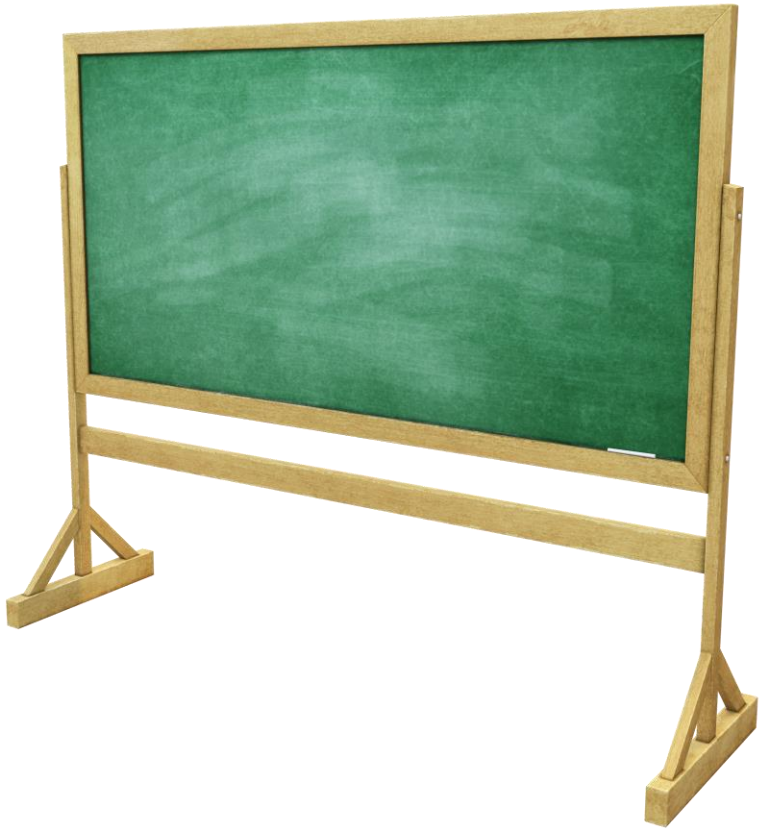
EDUCATION ACTIVITIES

Teaching

- 5KS & 5KS-A – Machine Design-Machine Elements

Learning

- 9MOP – Methodologies of Scientific Work
- 9VPR – Research Project and Its Managments
- 9AJ – English for Doctoral Degree Study
- 9EXT – Experimental Methods in Tribology
- 9EHD - Elastohydrodynamics



THANK YOU FOR YOUR ATTENTION

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