

Announcement Master's Thesis

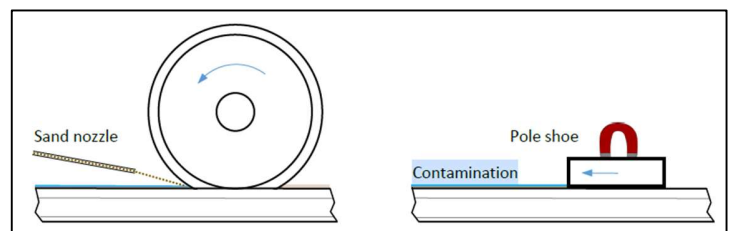
Development of an application oriented, efficient contact model in the framework of multibody dynamics

Magnetic Track Brakes (MTBs) are used for emergency braking in railway systems.

(<https://www.youtube.com/watch?v=pFljh7ad1lw>)

During operation, various third-body layers - such as sand particles, leaves, water, and oil - can accumulate on the contact surfaces between MTB shoes and the rail and they can significantly affect the braking performance of MTB systems.

In this master's thesis, the existing numerical frictional contact model, initially developed for analyzing the contact between the MTB and the rail, will be extended to account for the presence of third-body layers between the contacting surfaces. This enhanced mathematical model will be used to simulate the impact of these layers on braking performance.



What is expected to be done in this study?

- The existing model will be extended to account for generalized third-body layers at the contact interface.
- The model will be tested and verified through simulations to ensure its robustness and accuracy.
- The simulation results will be evaluated to assess the impact of third-body layers on braking performance and thoroughly discussed.

Your profile:

- Good knowledge of the basics of mechanics
- Good programming skills in SIMPACK/MATLAB and/or ABAQUS or having the motivation to learn them
- Independence, a high level of motivation and problem-solving skills

The project is carried out within the CD Laboratory for Enhanced Braking Behaviour of Railway Vehicles. If you are interested in working on this master's thesis with us and would like to join our team, please contact us by sending a short email.

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