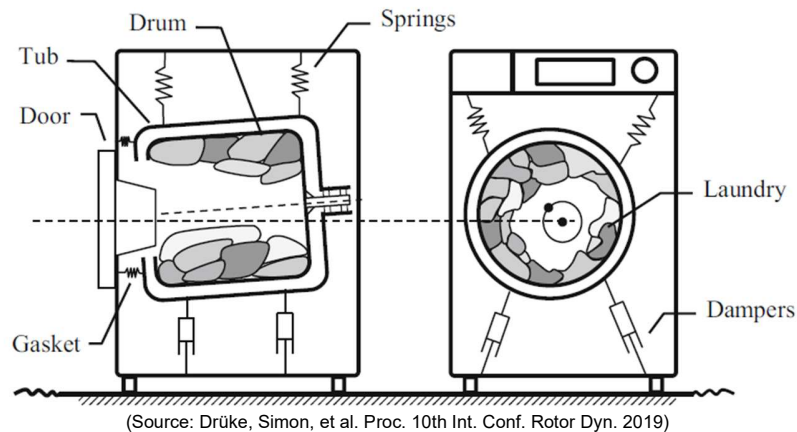


## Announcement Master's Thesis

### Optimization of Dynamic Components in New Generation Washing Machines

New-generation washing machines are designed to operate at higher speeds with increased load capacities. Additionally, all components are now manufactured from cost-effective materials, such as plastics, rather than traditional metal parts. These new materials have distinct dynamic behaviors, mainly due to their lower stiffness and unique damping properties. These significant changes in operating conditions and materials used require a comprehensive redesign and optimization of dynamic system components, including springs and dampers. This study aims to analyze the effects of all relevant parameters in the dynamic system and to determine optimal material properties, coefficients, and geometric arrangements for springs and dampers. The goal is to reduce undesirable oscillations during operation and enhance overall machine stability at critical loading conditions. For this purpose, a multibody dynamic model and a rotor dynamic model will be developed, and simulation results will be evaluated.



(Source: Drüke, Simon, et al. Proc. 10th Int. Conf. Rotor Dyn. 2019)

What is expected to be done in this study?

- Development of a 3D rotor dynamic model to simulate and analyze oscillatory behaviors under varying conditions (in Matlab),
- Development of a multibody dynamic model accurately represents the interactions of washing machine components, focusing on springs, dampers, and critical loading conditions (in Simpack),
- Performing a comprehensive parametric analysis to determine optimal dynamic system parameters.

Your profile:

- Good knowledge of the basics of mechanics,
- Good programming skills in Matlab and Simpack or having a high motivation to learn it,
- Independence, a high level of motivation and problem-solving skills.

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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