

## Vehicle dynamics investigation of the Self-Steering Independent Wheel Pair (EE) using multi-body simulations

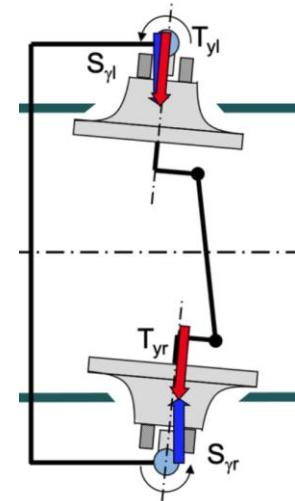
In the 1980s, a new type of running gear for light rail vehicles was developed at the IFS. It is characterized by the special wheel mount, which allows the wheels to swivel around an external vertical axis. The wheels thus regulate their alignment themselves and align themselves tangentially to the rail. As a result, they can run with little wear.

Prototypes show that the driving behavior could be improved. Since multibody simulation (MBS) was not state of the art in the design at the time, these simulations are to be made up for the chassis as part of the work. For this purpose, the chassis is to be modeled in the MBS software SIMPACK and the running behavior is to be simulated. In a subsequent sensitivity analysis, the influence of various parameters such as friction, damping and design aspect ratios is to be recorded and evaluated on different tracks. The findings are to be used to optimize the running gear in terms of running dynamics.

### Tasks:

- Familiarization with the design of the EEF
- Creation of a MBS model in SIMPACK
- Simulation and evaluation of the running behavior
- Sensitivity analysis of different parameters
- Optimization of the running gear
- Documentation

The content and scope can be adapted depending on the type of work. Interest and previous knowledge of mechanical dynamics are required. Contact me with an informal e-mail if you are interested.



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