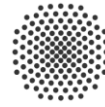


Research project: Sensor-based collision detection for rail vehicles

Development of a sensor system for the detection of impact events in rail vehicles

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Research and test train of Deutsche Bahn AG advanced Train Lab (aTL)

Motivation

An increasing degree of automation requires the detection of impact and rollover events, as these are subject to reporting requirements and may lead to significant changes in operating procedures. In contrast to visual systems that detect an area in front of the vehicle, such a system has the task of detecting an event that has already occurred.

Initial situation

Within the scope of a feasibility study on impact and rollover detection for DB Netze, various sensors and sensor systems were investigated with regard to their suitability for detecting impact events and their technical feasibility was confirmed. The sensor system is now to be verified.

Intended research results

- Demonstration of the practical feasibility and proof of the functionality of the sensor system by means of a temporary, prototypical setup
- Generation of sensor data during normal operation of the rail vehicle and in case of extraordinary loads

Method

- FEM-based structural analysis for the determination of suitable sensor positions
- Equipment of the aTL or its original components with a prototypical setup of the sensor system
- Test bench trials to check the functionality of the sensor system and for sensor data generation under the influence of extraordinary loads
- Vehicle tests with the aTL for sensor data generation during normal operation