The Analysis of a Rail Vehicle with a Tilting Bogie

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The paper deals with simulation analysis of a rail vehicle with a tilting bogie. The goal is to determine the wheel force in the rail-wheel contact and subsequently determine the safety against derailment. The rail vehicle model was designed in CAD program CATIA and imported to program SIMPACK with the RAIL module extension afterwards. Eight variants of different velocity, vehicle occupancy and setting of the tilting mechanism were analysed. The vehicle model was run along a track composed of straight sections and four succesive curves. Diagrams of the examined quantities icluding the lateral flanging force, vertical wheel load and the safety against derailment for the eight different variants make the result of the simulation analysis. Arising from the analysis, the biggest differences of results can be seen between the two variants of the highest speed but with different occupancy.

Keywords: Simpack, Rail-wheel contact forces, Safety against derailment, Simulation

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