Determination of Stiffness of Triple Spring Built in a Bogie of a Rail Vehicle

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The article deals with the calculation of stiffness of a secondary suspension spring built in a bogie of a rail vehicle with a tilting car body. The vertical stiffness of the springs was calculated using the ANSYS program. The results were compared with calculated values afterwards. The lateral stiffness was evaluated in a similar manner. Analytical method by Gross, Wahl, Budrick, Timoshenko and Ponomarev was used for comparison with numerical values. The ANSYS simulation was performed for calculating the vertical stiffness of the triple springs. The most suitable analytical method is a method by Timoshenko and Ponomarev, where the percentage difference was the smallest. The obtained data will be used as an input for the design of coil springs which will be implemented in a model of a vehicle with a tilting car body, for which the comfort values during transition in curve will eventually be determined.

Keywords: Secondary Suspension, Spring, Bogie, Stiffness

Acknowledgement

The work was supported by the Scientific Grant Agency of the Ministry of Education of the Slovak Republic and the Slovak Academy of Sciences in project No. 1/0347/12: "Railway wheel tread profile wear research under the rail vehicle in operation conditions simulation on the test bench", project No. 1/0383/12: "The rail vehicle running properties research with the help of a computer simulation." and the project No. APVV-0842-11: "Equivalent railway operation load simulator on the roller rig".

Research-Educational Center of Rail Vehicles (VVCKV).

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Paper number: M201678