Investigation of Vertical Vibration of a Vehicle Vodel Driving Through a Horizontal Curve

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The article deals with the problem of vertical vibration of vehicle model driving a horizontal curve of radius R = 100 m. A brief theoretical work on the topic is presented in the introduction part. Where a descriptions of the forces acting on the vehicle while passing through the curve are discussed. In the second part of this work, a detailed description of the vehicle model is given. The equations of motion of the vehicle model are then derived for vertical dynamic response of the mechanical system considered herein. Analysis of the effect of asymmetry is then performed when the vehicle is driving the curve at a constant speed v = 30 km/h, excited by general kinematic excitations. Firstly, the asymmetrical model is considered and the results are then compared to a fully symmetrical model.

Keywords: Vibration, Horizontal Curve, Vehicle Model, Equations of Motion

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