The Effect of Asymmetry on Vertical Dynamic Response of Railway Vehicles

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An experimental and analytical study on the effect of asymmetry on vertical dynamic response of railway vehicles has been conducted. The experimental study featured a typical vehicle model of laboratory scale and a real railway vehicle wagon. The experiment was used to gain insight into the effect of asymmetry on vertical dynamic response and to validate an analytical model of the vehicle-track interaction. This paper presents the results from the study and shows that mechanical asymmetry changes the behaviors of the system. The current contribution introduces a methodology of analytical solution of vertical dynamic response of the railway vehicle. Moreover, a mathematical model according to the physical system considered was developed under MATLAB environment.

Keywords: vehicle asymmetry, railway vehicle, analytical model, experiment test

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