

(INFLUENCE OF HEAVY TRUCK DYNAMIC PARAMETERS ON RIDE COMFORT USING A 3D DYNAMIC MODEL)

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TÓM TẮT:

13Matlab/Simulink

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Abstract:

In order to study the influence of heavy vehicle dynamic parameters on ride comfort with random road excitation, a 3-D dynamic model with 13 DOF (degree of freedom) is established for simulation and the weighted r.m.s acceleration responses of the vertical driver's seat, pitch and roll angle of the cab are chosen as objective functions which use Matlab/Simulink software to simulate to calculate the objective functions. The influence of vehicle dynamics system parameters on the vertical vibration of driver's seat, pitch and roll of the cab which include the stiffness and damping of vehicle suspension, tires, cab suspension and the driver's seat suspension are analyzed in this paper. The results show that the influence of the stiffness and damping parameters in the suspension systems on the vehicle ride comfort is very obvious. The vehicle ride comfort is going to be worse with the increase of the stiffness of the suspension systems and tires. And the vehicle ride comfort is improved with the increase of the damping of the suspension systems. This study can provide a theoretical basis for the suspension system designed for heavy trucks.

Key words: heavy vehicle; dynamic model; dynamic system parameter; ride comfort