Vibration Analysis of Suspension System for Six-Wheel Vehicles

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ABSTRACT

Six-wheel vehicles have more advantages compared to four-wheel vehicles, such better ride comfort and great stability. Six-wheel vehicles can provide good support and enough road holding ability and easy steering with suitable suspension design. For example, the suspension system of six-wheel power wheelchairs absorbs shocks excited from road surface irregularities. It can also change the relative positions of front caster and middle wheel immediately to fit the road surface. The purpose of this research is to estimate the performance of suspension system of the six-wheel vehicle by numerical simulation. A product in the market is considered in this study. First, the dynamic governing equations are derived, then solving the governing equations by MATLAB program to obtain the responses of the power wheelchair and eigensolutions (natural frequencies) of the suspension system.Finally, the numerical results of the time responses are compared with experimental data.

Keywords : Power Wheelchair ; Six-Wheel Vehicle ; Suspension System

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