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Sliding Mode Controller for Active Suspension System on a Passenger Car Model

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Abstract : The main purpose of a car suspension system is to reduce the vibrations resulting from road roughness. The main objective of this research paper is to decrease vibration and improve passenger comfort through controlling car suspension system using sliding mode control techniques. The mathematical model for passive and active suspensions systems for quarter car model which subject to excitation from different road profiles is obtained. The active suspension system is synthesized based on sliding mode control for a quarter car model. The performance of the sliding mode control is determined through computer simulations using MATLAB and SIMULINK toolbox. The simulated results plotted in time domain, and root mean square values. It is found that active suspension system using sliding mode control improves the ride comfort and decrease vibration.

Keywords : quarter car model, active suspension system, sliding mode control, road profile
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