MATHEMATICAL MODELING AND VIBRATION ANALYSIS OF SEMIACTIVE SUSPENSION USING SIMULINK

P. R. KALE AND S. R. LAPALIKAR

Abstract

Design of modern car suspension systems with contradictory limitations on ride comfort and road handling is a challenging task in today's automobile scenario. For the past few decades intelligent suspension system have come into commercial use, especially in the passenger car industry. In this paper, a linear multivariable quarter car model of passive and semiactive suspension system has been proposed to compare the dynamic performance of a car model at particular road excitation input. A skyhook control strategy has been applied to a semiactive suspension model for a computer simulation. The simulation results of passive and on-off semiactive suspension system have been compared by using MATLAB (SIMULINK) software. The results show better performance for semiactive suspension in comparison with passive suspension. This helps to enhance the performance and thus reduces an inherent trade off between the design parameters of conventional suspension system.