

The 8th International Symposium on Advanced Vehicle Control
August 2006

Continuous Damping Control for Semi-Active Suspension

Lin, Chih-Jer; Wu, Jian-Da; Tai, Chia-Wei; Kuo, Kun-Yin

Abstract

This paper describes the development of a continuous damping control law for the 2-DOF model of the vehicle with a semi-active suspension. The suspension system consists of a continuously variable damper that can vary the suspension stiffness among 7 different levels. A test rig is designed to measure the different damping coefficients and it will be used to implement the continuous damping control algorithm in the future. To establish the control algorithm of the damping system, the roads with different International Roughness Index, IRI, are used to test performance of each damping level. An optimal control theory is studied to optimize a performance index of ride comfort and the driving safety is also taken into consideration. Then, the continuous damping control architecture consisting of the stepping motors, the stepping driver, the variable damper and the micro-processor based controller is studied for the future implementation.

Key words : Vehicle dynamics and control; Suspension control; Modeling and simulation technology