

Yaw stability improvement for four-wheel active steering vehicle using sliding mode control

Abstract

Active steering control is one of the approach that can be used to improve the vehicle's lateral and yaw stability. By combining active front steering and active rear steering control, the vehicle's handling and stability can be improved via four wheel active steering (4WAS) control. In this paper, a robust control algorithm of sliding mode control is designed for 4WAS vehicle. Single track 2 d.o.f linear model is utilized for controller design and simulation purpose. Simulation for 4WAS and front steering (AFS) is carried out in Simulink for step steer and double lane change maneuver to verify the effectiveness of the proposed control system. The result shows that the 4WAS perform better than the AFS in tracking the desired response trajectory.