

Modelling and simulation of electronic wedge brake based antilock brake system

ABSTRACT

This paper discusses the modelling and validation of Electronic Wedge Brake (EWB) based Antilock Brake System (ABS) for typical vehicle. The EWB was use as brake actuator while quarter car vehicle is select to establish ABS. The physical modelling is used to describe both model with others subsystem. The aerodynamic deceleration force factor in vehicle dynamic also has been consider. In addition, various tire model to represent tire behaviour is discuss and compared by simulation software. It can be conclude that the quarter car model is a nonlinear model where velocity of vehicle, tire angular velocity and tire sideslip are consider as the state vectors. However, the braking actuator which contain EWB mechanism and electrical motor as driver can be describe as a linear model with 5th order system.

Keyword: Modelling; Electronic Wedge Brake (EWB); Antilock Brake System (ABS); Quarter Car Model (QCM)