The Control And Experiment For Anti-Lock Braking System

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ABSTRACT

This thesis is the research for the special properties of anti- lock braking system and propose the design named anti-lock braking fuzzy controller. Also design another testing platform of anti-lock braking in order to practice the designd controller and make necessary verification and execute the laboratory research of anti-lock braking system. According to the development of theory, we have inferred the mathematicmodels based on the dynamic propert y of braking which include vehicledynamic tire force model and hydraulic system dynamics. Then figures theseout by fuzzy controlling principle and control the solenoid valve of hydraulic braking system through fuzzy inference which may keep the braketorque around the best value and achieve the demand of minimum brakingdistance and best operating control. Through simulink in matlab software,the block diagramof anti-lock braking system is constructed and thecomputerized imitation of anti-lock braking system has provided technicalreference to design the fuzzy controller by real parameters by hard wareequipment. For the development on testing platform, in order to test and understandthe motivated efficiency of anti-lock barking controller, this testingplatform has been designed according to the theory experience and enableus to obtain all laboratory figures and cross-testify them. We may have complete understanding on the operation of anti-lock brakingsystem and judge the situation of controller to make improvement orrectification. It is certified that this fuzzy controller has achievedits efficiency by laboratory result.

Keywords : anti-lock braking system ; anti-lock braking fuzzy controller ; slip ; brake torque

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