On the Implementation of Anti-lock Brake System for Motorcycles

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ABSTRACT

This thesis continues the research of the pressure regulator for the ABS(Antilock Brake System) on motorcycle. According to the previous study, we designed and implemented a new mechanism of pressure regulator. In this thesis, we changed the outside oil circuit into the regulator to reduce the dimension of the regulator and prevent leakage. From the tests, we know that the new regulator can reduce the internal leakage of the braking oil. Then we designed two controllers with the feedback of slip ratio and angular velocity of the wheel respectively, and test their performance on the experimental platform. We also tried to use the tri-axial accelerometer to measure the acceleration of the motorcycle during its motion, and compute its velocity with numerical integration. After having the velocity data of motorcycle, we can use the controller with the feedback of slip ratio in the real road running, and it provides the reference for the dynamical analysis.

Keywords : ABS(Antilock Brake System) ; motorcycle ; brake mechanism ; fuzzy logic control ; solenoid coil ; oil hydraulic ; accelerometer ; velocity measurement

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