

# The Study of Vehicle Handling Control with Steer-by-wire System

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## ABSTRACT

The main purpose of this study is to focus on the handling control of vehicle with Steer-by-Wire System(SBW). Vehicle with steer-by-wire system are get rid of limitations of traditional steering system, which can be developed the vehicle handling control. In vehicle handling control, the main purpose is to focus on sideslip angles at C.G. control. Under this control system, the vehicle would always have the minimal sideslip angle in C.G. range, and the vehicle would have stable handling at high speed or low speed in cornering. There are two methods for vehicle handling control. First, it is the front wheel control. Because there are only two tires in the front wheel steering system vehicle, we can not efficiently reduce the sideslip angle at C.G.. Therefore, we designed the vehicle handling control of four wheels which can control the rear wheel. First, we used the CarSim software to verify the proposed method for the vehicle handling control. Next, apparatus of the Hardware-In-the-Loop(HIL) is connected to the steer-by-wire system platform and the controller of steering motor. Through the hardware-in-the-loop test result, we can verify that the vehicle can obtain a stable steering as vehicle (Focus), and achieved a satisfactory result.

Keywords : Vehicle handling control, Sideslip angle, Steer-by-Wire System, CarSim, Hardware-In-the-Loop

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