

Research on Control Strategy of Differential Drive Assisted Steering of Distributed Drive Electric Vehicle

Authors : J. Liu, Z. P. Yu, L. Xiong, Y. Feng, J. He

Abstract : According to the independence, accuracy and controllability of the driving/braking torque of the distributed drive electric vehicle, a control strategy of differential drive assisted steering was designed. Firstly, the assisted curve under different speed and steering wheel torque was developed and the differential torques were distributed to the right and left front wheels. Then the steering return ability assisted control algorithm was designed. At last, the joint simulation was conducted by CarSim/Simulink. The result indicated: the differential drive assisted steering algorithm could provide enough steering drive-assisted under low speed and improve the steering portability. Along with the increase of the speed, the provided steering drive-assisted decreased. With the control algorithm, the steering stiffness of the steering system increased along with the increase of the speed, which ensures the driver's road feeling. The control algorithm of differential drive assisted steering could avoid the understeer under low speed effectively.

Keywords : differential assisted steering, control strategy, distributed drive electric vehicle, driving/braking torque

Conference Title : ICVES 2014 : International Conference on Vehicular Electronics and Safety

Conference Location : Stockholm, Sweden

Conference Dates : July 14-15, 2014