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基于车轮加速度门限的牵引力控制系统制动控制算法

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摘要 针对某4×2
车辆提出了一种基于车轮加速度门限自调整的TCS制动控制算法。选择以驱动轮相对滑转率和加速度为控制门限设计了控制逻辑。通过在Matlab/Simulink环境下进行仿真，分析了加速度门限的取值对控制效果的影响。在研究不同因素对加速度门限取值影响的趋势的基础上，设计了一种以查表的方式根据不同工况自动选取加速度门限的方法，并通过硬件在环试验对算法进行了验证。结果表明，算法能选取适宜的加速度门限，有效地控制驱动轮滑转并提高车辆牵引性能。

关键词 车辆工程,加速度门限,牵引力控制系统,制动控制,仿真,硬件在环试验

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Brake control algorithm of traction control system based on wheel acceleration threshold

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Abstract A brake control algorithm of the traction control system based on the self adjusting wheel acceleration threshold was proposed for the 4×2 vehicles, and a control logic was designed using the relative slip rate of the driving wheel as the primary threshold and the wheel acceleration as the secondary threshold. The simulation was performed using the Matlab/Simulink to study the effect of the selected acceleration on the control result. Based on the effect of different factors on the selection of the acceleration threshold, a table look up method to select automatically the acceleration threshold according to different driving conditions was designed and verified by the hardware in the loop test. The results show that the proposed algorithm can select the optimized acceleration threshold to control effectively the slippage of the driving wheel and improve the vehicle traction performance.

Key words vehicle engineering, acceleration threshold,traction control system(TCS),brake control,simulation hardware in the loop(HIL) test

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