

基于多变量频域控制方法的车辆底盘集成控制 Integrated Chassis Control Based on Multivariable Frequency Domain Control Methods

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关键词: 车辆 底盘集成控制 多变量系统 频域控制 联合仿真

摘要: 提出了一种基于多变量频域控制方法的车辆底盘集成控制策略, 协调控制车辆主动转向系统和主动制动系统。对典型多变量车辆系统进行分析, 应用多变量频域控制理论设计底盘集成控制器, 并利用基于Matlab与AMESim的联合仿真平台进行典型工况仿真分析。结果表明, 基于多变量频域控制方法的车辆底盘集成控制器能够消除主动转向系统和主动制动系统之间的干涉和耦合, 同时显著提高车辆操纵稳定性。 An integrated chassis control approach based on the multivariable frequency domain control methods was proposed to coordinate the active steering system and the active braking system. The multivariable vehicle system was analyzed, and the integrated chassis controller was designed by using the multivariable frequency domain control methods. A typical case was simulated on the co-simulation platform with Matlab and AMESim. The simulation results showed that the controller could eliminate the interference and coupling between the active steering system and the active braking system, and improve the vehicle handling and stability performance effectively.

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