汽车驾驶辅助实时仿真系统的整车动力学模型

吴利军 王建强

清华大学

关键词：　汽车 驾驶辅助系统 实时仿真 动力学模型

摘　要：　简述了以xPC技术为核心的汽车驾驶辅助实时仿真系统的总体结构。基于汽车各主要部件的动力学分析，建立了整车七自由度非线性动力学模型，详细阐述了利用Matlab/Simulink及Stateflow进行模型实现的过程。仿真及试验表明，模型占用计算资源少，且准确地反映了整车纵、侧向动力学特性，能够满足汽车驾驶辅助实时仿真系统的要求。　A hardware in the loop simulator used for the development of vehicle driver assistant systems was outlined. Based on analysis of dynamics of main vehicle components, a seven-degree-of-freedom non-linear vehicle dynamics model was built for the simulator. Modeling process for vehicle model with Matlab/Simulink and Stateflow was depicted in detail. Simulation and road tests have been conducted to evaluate the vehicle model. It is shown that the vehicle model has small demand for computation resources and good accuracy in terms of both longitudinal and lateral dynamics.

查看全文（请使用Adobe Acrobat 6.0版本浏览）　　返回首页　　引用本文