

## 电控自动变速器换挡过程控制策略

孙文涛 陈慧岩

北京理工大学

关键词: 车辆 电控自动变速器 换挡过程 控制策略

摘要: 为了提高电控自动变速器的换挡品质, 通过分析自动变速器的换挡过渡过程, 建立了行星式自动变速器动力学模型, 并应用此模型对换挡过程进行了详细分析, 得到换挡过渡过程的变化规律, 同时对离合器充放油规律进行了研究, 并采用PWM控制电磁阀对离合器充放油压力进行调节。在换挡过程中, 系统先后采用了开环控制、斜率控制以及基于增量PID算法的闭环控制, 同时改变发动机喷油量对换挡过程进行了控制。通过试验可以看出换挡过程中采用的开环控制、斜率控制以及基于增量PID算法的闭环控制以及发动机喷油量的控制策略改善了换挡品质。The shift system of electronic automatic transmission was analyzed, and a mathematic model of the shifting process was set up. The model could be used directly for shifting process control. With the model the shifting process was also analyzed, and the rule of shifting process was obtained. The process of the clutch applies and exhaust was analyzed. Through adjusting the pressure by using PWM to control the solenoids, the pressure was controlled in good conditions. Trough the research, the system used the open-loop control during the fill-time phase, faxed ramp rate control during the second phase and closed-loop control during the third phase by using PID control strategy. At the same time, the electronic engine was used to adjust the engine speed to acquire the better quality of shifting-process. Finally, though a bench test, the control strategy of shifting process of the electronic automatic transmission was obtained.

[查看全文 \(请使用Adobe Acrobat 6.0版本浏览\)](#) [返回首页](#)

[引用本文](#)