吉林大学学报（工学版） 未定 未定 (未定): ISSN: 1671-5497 CN: 22-1341/T

未定

基于蚁群寻优的汽车牵引力**PID**控制参数整定

李静

汽车工程学院

收稿日期 2006-11-18 修回日期 网络版发布日期 2007-2-26 接受日期

摘要
将蚁群算法应用于汽车牵引力PID控制参数整定控制器设计。在搭建软件在环仿真平台和硬件在环试验平台的基础上，调试、标定了控制器参数，获得了满足实时性要求的查询算法，
进行了典型工况硬件在环试验。试验结果表明：控制算法能有效改善汽车在弱附着地面的加速性能。

关键词 汽车 牵引力控制 蚁群算法 寻优 PID 参数整定

分类号

Regulation of PID controller parameters based on ant colony optimization algorithm of traction control system for automobiles

汽车工程学院

Abstract Ant colony algorithm was used to design PID controller of traction control system, whose parameters could be adjusted automatically. After a software-in-the-loop simulator and a hardware-in-the-loop test bench had been erected, the controller parameters were debugged and calibrated, and then the algorithm based on lookup table was obtained to meet real-time requirement. The hardware-in-the-loop tests on typical roads were made. The results show that the control algorithm can improve accelerating performance on low adhesion road effectively.

Key words Automobile Traction control Ant colony algorithm Optimization PID Parameter-regulating

DOI:

通讯作者 李静 liye1129@163.com