# 基于曲柄滑块机构原理导航的农业机器人设计 Design of Agricultural Robot Navigated by the Slider-crank Mechanism

朱磊磊 陈军 白晓鸽 杨娜 苏清华

西北农林科技大学

关键词： 农业机器人 导航 曲柄滑块机构 模糊控制

摘 要： 研究开发了一种自动导航果园用履带式移动机器人，作为果园精细化作业的移动平台。机器人采用基于曲柄滑块机构原理的导航方式，以导航机构检测的姿态角和位置角作为输入量设计了模糊PID控制器。试验表明，机器人以0.15m/s的速度直线行走时，最大跟踪误差小于0.02m；机器人转弯半径为2m时，最大跟踪误差小于0.05m。 An orchard tracked mobile robot was developed in order to raise automation level of orchard management, improve operation efficiency, and reduce the intensity of operation. A navigation method based on the slider-crank mechanism was developed, and a fuzzy PID controller was designed, which used the attitude angle and position angle of the robot guiding mechanism as the input parameters. The experiments showed that the robot could travel in a straight line with a maximum lateral error of 0.02m when the robot moved at the speed of 0.15m/s, and the maximum lateral error of 0.05m when the turning radius was 2m.

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