论文与报告

# 离轴式带拖车移动机器人的路径跟踪控制

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摘要
研究了离轴式拖车移动机器人系统任意一节车体的几何路径跟踪问题. 首先推导出系统的时间--状态线性化模型并证明了系统的能控性; 然后应用内模原理设计了线性动态反馈控制律, 该控制律可以保证路径跟踪误差有界和最终一致有界, 且最终一致界正比于期望路径函数变化率的立方. 仿真结果证实了控制律的有效性.
关键词　 离轴式拖车移动机器人　 路径跟踪　 时间--状态模型　 非完整系统　 输出跟踪　
分类号

# Path Following Control of Tractor-trailers with Off-axle Hitching

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Abstract
In this work, we investigated the path following problem of an arbitrary body of tractor-trailers with off-axle hitching. First, a linearized time-state model was derived and proved to be controllable. A dynamic linear feedback control law was then proposed based on internal mode principal to guarantee that the path tracking error is uniformly ultimately bounded and the bound is cubically proportional to the variation rate of the desired geometric path function. Simulation results showed the effectiveness of the proposed control scheme.
Key words　 Tractor-trailers with off-axle hitching　 path following　 time-state model　 nonholonomic systems　 output tracking　

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