

短文

## 基于饱和方法的直升机镇定设计

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摘要

考虑直升机的镇定问题. 通过把直升机的部分动态视为非线性扰动下的积分器链, 并进一步转化为前馈型系统, 然后运用饱和设计方法, 给出了直升机镇定控制器的设计. 并用 Lyapunov 方法证明了闭环系统的全局渐近稳定性. 本文设计方法简单, 无需前推、反推技巧, 也无需小增益分析. 与现存的控制器设计相比, 本文的控制律形式简单. 数例仿真表明了方法的有效性.

关键词 [镇定](#) [饱和控制](#) [直升机控制](#)

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## Stabilization of the PVTOL via Saturation Technique

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Abstract

The problem of stabilization of the planar vertical take-off and landing (PVTOL) aircraft is considered in this paper. Based on a saturation design approach, the design of stabilization controller of the PVTOL is given by viewing a partial dynamics of the PVTOL as a chain of integrators with nonlinear perturbation and by further transforming it into a feedforward-form system. The global asymptotic stability of the closed loop system is proven using Lyapunov method. The design method in this paper is simple in the sense that it requires neither the forwarding and backstepping technique nor the small gain analysis. The control law in this paper has a simpler functional form than the existing designs and its effectiveness is verified by simulations.

Key words [Stabilization](#) [saturated control](#) [helicopter control](#)

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