

短文

一类非自衡对象的PID控制

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摘要

本文讨论非自衡对象PID控制器设计问题. 首先在鲁棒控制理论的基础上定义了最优性能指标, 然后针对控制系统性能传递函数的特点发展了两种设计方法, 通过引入2型滤波器使系统满足了渐近跟踪的要求, 并解析地得到了PID控制器. 控制器的特点是标称性能可以定量地估计, 鲁棒性可以方便地调节.

关键词 [过程控制](#) [PID控制器](#) [非自衡对象](#)

分类号

PID Control for Integrator and Dead Time Process

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Abstract

A PID controller design procedure is developed in this paper for the control of processes with integrator and time delay. First, an optimal performance index is defined based on robust control theory. Second, two methods are proposed in the light of the characteristics of the system loop transfer function. A type 2 filter is introduced to meet the requirement of trajectory asymptotically tracking. And a PID controller is obtained analytically. The feature of the controller is that the nominal performance can be evaluated quantitatively and the robustness can be adjusted conveniently.

Key words [Process control](#) [PID control](#) [integrator and time delay plant](#)

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