

论文与报告

按条件更新参数的自校正控制器

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摘要

本文对具有有界扰动的线性时不变系统提出了一种新的按条件更新参数的自校正控制算法. 算法的特点是它的计算量与典型的自校正调节器不相上下, 但却具有跟随的能力, 同时还能保证闭环系统的稳定. 文章对采用此法后的系统稳定性、跟随误差的上限和参数估计的有界性等问题作了详细的理论分析, 最后给出了与其它几种方法对比的仿真结果.

关键词 [自适应控制](#) [自校正控制](#) [有界扰动](#) [稳定性](#) [跟随误差](#)

分类号

A Self-Tuning Controller Using Techniques of Conditionally Updating Parameter Estimates

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Abstract

In the paper, a new self-tuning controller using the techniques of conditionally updating the parameter estimates for time-invariant linear systems with bounded disturbances is proposed. The major feature of the new controller is that although the computational effort required is approximately the same as that required by the classical self-tuning regulator, it has the tracking capability in addition. Besides, the controller described in the paper ensures BIBO stability in the presence of bounded disturbances. The theoretical analysis of system stability, the upper bounds of tracking errors and the boundedness of parameter estimates when using the algorithm proposed in the paper are given in detail. Simulation results of the comparisons in performance between the new controller and some existing controllers are also given.

Key words [Adaptive control](#) [self-tuning control](#) [bounded disturbance](#) [stability](#) [tracking error](#)

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