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Hybrid Fuzzy-PID controller with auto-tuning according to the stability degree of the system

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Abstract

The synthesis algorithm of Hybrid Fuzzy-PID controller is proposed in this paper. The tuning parameters are calculated based on the value of stability degree of the system, which is determined in dependency of the system error variation using the fuzzy techniques. The proposed method permits that the tuning parameters to be recalculated during the operation of the control system, which fact permits that this method to be implemented as auto-tuning procedure of the Hybrid Fuzzy-PID controller. The synthesized algorithm of Hybrid Fuzzy-PID controller was compared with maximum stability degree criterion, parametrical optimization method and with fuzzy controller.

Keywords: *fuzzy controller, stability degree, control system, hybrid controller*

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