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短文

指令跟踪自适应广义预测控制及其应用

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摘要
现有的广义预测控制系统其闭环性能受可调参数影响较大, 它的目标函数无法直接规定闭环性能. 该文提出一种具有独立跟踪和调节目标的新型自适应广义预测控制算法, 并将其应用于快速时变的导弹控制系统设计中. 这种算法利用参考模型规定对指令信号的跟踪性能, 减少了可调参数对闭环性能的影响. 仿真结果证实了该算法的有效性.

关键词 自适应控制 预测控制 参考模型 时变系统

分类号

Command-following Adaptive Generalized Predictive Controller and It's Application

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Abstract
One drawback in the standard formulation of generalized predictive control (GPC) is that stability and performance of the closed-loop system are strongly depending on the tuning parameters in the cost-function. It is presented in this paper that a new adaptive generalized predictive controller which enables the tracking and regulation performance to be treated separately. Its application in the design of the time-varying control system of a missile is given. The new controller proposed here enables the designer to utilize the tracking dynamics obtained from a reference model. This gives the designer more freedom in the choice of tuning parameters to achieve user-specifications on both tracking and regulation performance. Simulation illustrates the effectiveness and good performance of the controller.

Key words Adaptive control predictive control Multiple model reference time-varying system

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