论文与报告

输入约束系统的滚动时域输出反馈控制方法研究

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摘要

This paper addresses the H_∞ output feedback control problem for discrete-time systems with actuator saturation. Initially, a constrained H_∞ output feedback control approach is presented in the framework of linear matrix inequalities (LMI) optimization. Under certain assumptions on the disturbance energy bound, closed-loop H_∞ performance is achieved. Furthermore, the moving horizon strategy is applied to an online management of the control performance so that the closed-loop system can satisfy control constraints in the case of unexpected large disturbances. A dissipation constraint is derived to achieve the moving horizon closed-loop system dissipative. Simulation results show that the constrained H_∞ controller works effectively under the disturbance assumption and that the moving horizon H_∞ controller can trade-off automatically between satisfying control constraints and enhancing performance.

关键词   Constrained systems H_∞ performance   output feedback   LMI optimization   moving horizon control

分类号

H_∞ Output Feedback Control of Constrained Systems via Moving Horizon Strategy

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Abstract
This paper addresses the H_∞ output feedback control problem for discrete-time systems with actuator saturation. Initially, a constrained H_∞ output feedback control approach is presented in the framework of linear matrix inequalities (LMI) optimization. Under certain assumptions on the disturbance energy bound, closed-loop H_∞ performance is achieved. Furthermore, the moving horizon strategy is applied to an online management of the control performance so that the closed-loop system can satisfy control constraints in the case of unexpected large disturbances. A dissipation constraint is derived to achieve the moving horizon closed-loop system dissipative. Simulation results show that the constrained H_∞ controller works effectively under the disturbance assumption and that the moving horizon H_∞ controller can trade-off automatically between satisfying control constraints and enhancing performance.

Key words   Constrained systems H_∞ performance   output feedback   LMI optimization   moving horizon control

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