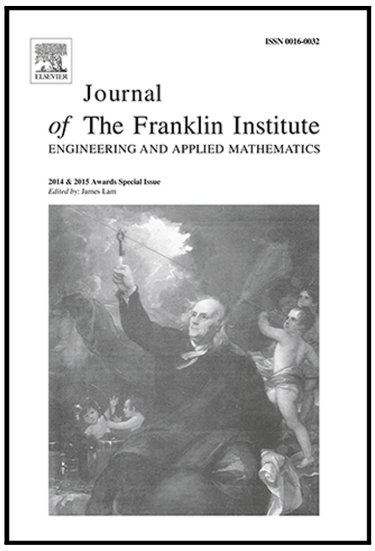

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PII: S0016-0032(18)30502-7
DOI: https://doi.org/10.1016/j.jfranklin.2018.07.024
Reference: FI 3571

To appear in: *Journal of the Franklin Institute*

Received date: 7 August 2017
Revised date: 30 June 2018
Accepted date: 5 July 2018

Please cite this article as: Aihua Hu, Jinde Cao, Manfeng Hu, Liuxiao Guo, Event-triggered group consensus for multi-agent systems subject to input saturation, *Journal of the Franklin Institute* (2018), doi: https://doi.org/10.1016/j.jfranklin.2018.07.024

Event-triggered group consensus for multi-agent systems subject to input saturation

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Abstract

This paper investigates group consensus for leaderless multi-agent systems with non-identical dynamics. The consensus protocol is put forward in the form of the distributed event-triggered control subject to saturation, which depends on information from neighboring agents at event-triggered instants. In order to exclude the Zeno behavior and save resources, the given event-triggered condition is detected only at discrete sampling times, where the sampling intervals can be variable. Based on the graph theory, Lyapunov-Krasovskii functional method and by adopting the free-weighting matrix technique, some sufficient group consensus criteria in terms of linear matrix inequalities are derived. Furthermore, optimization problems aiming at maximizing the event-triggered parameter and the consensus region are proposed. Finally, numerical simulations illustrate the effectiveness of the theoretical results.

Keywords: Group consensus; Event-triggered scheme; Saturation; Variable sampling intervals; Distributed control

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