

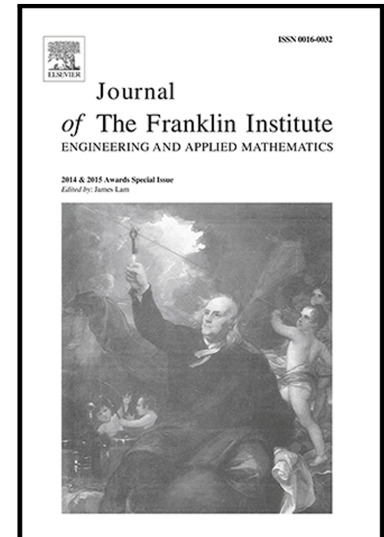
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Mean-square Consensus of Heterogeneous Multi-agent Systems with Communication Noises[☆]

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Abstract

This paper addresses the mean-square consensus problems of continuous-time heterogeneous multi-agent systems with communication noises. First, in order to attenuate the communication noises, time-varying consensus gains are applied in the consensus algorithm. Then, by using the tools of algebraic graph theory and stochastic analysis, sufficient conditions for the mean-square consensus are given for the cases with and without a leader. Finally, simulations are provided to demonstrate the effectiveness of the proposed algorithms.

Keywords: Heterogeneous, mean-square consensus, communication noises, time-varying gain

2010 MSC: 93E03, 93E15, 60H10, 94C15

1. Introduction

In recent years, the distributed coordination of multi-agent systems has attracted more and more attention due to its widely applications in practical systems, such as unmanned aerial vehicles(UAV), distributed robots, mobile sensor networks and so on. A fundamental requirement in the distributed coordination of multi-agent systems is that all agents reach an agreement by receiving the

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