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Advanced sampled-data synchronization control for complex dynamical networks with coupling time-varying delays

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Abstract

This study addresses sampled-data control in the synchronization problem of complex dynamical networks systems with a coupling time-varying delay. By constructing the augmented Lyapunov-Krasovskii functionals and using some mathematical techniques, a sampled-data synchronization criterion is derived as the first result with the framework of linear matrix inequalities. Based on the first result, a sampled-data synchronization control method is proposed as the second result. Finally, the effectiveness and superiority of the proposed results will be shown by comparing the maximum sampling period with the established results in two numerical examples.

Keywords: Complex dynamical networks, Synchronization, Wirtinger-based integral inequality, Sampled-data control, Lyapunov method.

1 Introduction

A study of complex dynamical networks (CDNs) has attracted considerable attention because many practical systems, such as chemical engineering systems, ecosystems, electronic power grids, and The World Wide Web can be represented by many types of CDNs. [CDNs are com-](#)

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