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Consensus Problem of High-Order Multi-Agent Systems under Predictor-Based Algorithm

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Abstract : For the multi-agent systems with agent's dynamics described by high-order integrator, and usual consensus algorithm composed of the state coordination control parts is proposed. Under communication delay, consensus algorithm in asynchronously-coupled form just can make the agents achieve a stationary consensus, and sufficient consensus condition is obtained based on frequency-domain analysis. To recover the original consensus state of the high-order agents without communication delay, besides, a predictor-based consensus algorithm is constructed via multiplying the delayed neighboring agents' states by a delay-related compensation part, and sufficient consensus condition is also obtained. Simulation illustrates the correctness of the results.

Keywords : high-order dynamic agents, communication delay, consensus, predictor-based algorithm
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