

数学与系统科学研究院学术报告

报告题目: Stability analysis of networks of multi-agent systems with time-varying topologies: a brief review and prospect

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摘要:

Consensus problem has been recognized as being of importance in distribution coordination of dynamic agent systems, which is widely applied in distributed computing, management science, flocking/swarming theory, distributed control, and sensor networks. In the past decade, the stability analysis of consensus algorithms has been one of focal points in control theory and mathematics. Besides static network topology, in many real-world applications, the agents is moving. In this case, one must consider time-varying topologies under link failure or creation. In this talk, I would like to give a brief review on stability analysis of consensus algorithms of networks of multi-agent systems with time-varying topologies and the basic mathematical techniques. As I show, for directed topologies, the property of spanning trees acrossing a length of time interval is located at the core position to study consensus dynamics. Besides the deterministic temporal variation, randomness is of much importance and would be an interesting future topic, in which lots of statistical analysis tools could be utilized.