Robust Stabilization against Unknown Consensus Network

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Abstract : This paper considers a robust stabilization problem of a single agent in a multi-agent consensus system composed of identical agents, when the network topology of the system is completely unknown. It is shown that the transfer function of an agent in a consensus system can be described as a multiplicative perturbation of the isolated agent transfer function in frequency domain. Applying known robust stabilization results, we present sufficient conditions for a robust stabilization of an agent against unknown network topology.