



APPLIED MATHEMATICS SEMINAR

Synchronization of Kuramoto Model with Anticipatory Agents on Undirected Graphs

By

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Abstract: We consider a coupled Kuramoto system on undirected networks composed of intelligent agents that anticipate the future states of their neighbors and try to align their states accordingly. We show that this anticipatory behavior results in multiple phase-synchronized solutions at different collective frequencies and different stability characteristics. We derive an exact condition for the stability of the phase-synchronized states. We show that the system can exhibit multistability, converging to different phase-synchronized solutions depending on the initial conditions. We observed that depending on parameters and the underlying network structure, the system also converges to frequency-synchronized states like antiphase and clustered solutions.

Date: Monday, January 9, 2023

Time: 13:30-14:30, GMT+3

Place: ZOOM

To request the event link, please send a message to yheydarzade@bilkent.edu.tr.