Analysis Seminar

Anticipation in discrete-time networked systems

By

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Abstract: We investigate networks of coupled dynamical systems in discrete time where the units anticipate the states of their neighbours and try to align their states accordingly. Anticipation is done using past state information and hence introduces a memory effect in the form of a time delay. We show that, under specific conditions depending on the network structure, the system converges to consensus faster under anticipation. We apply the results to coupled nonlinear systems and analyse the stability of synchronized states under anticipation. We demonstrate that anticipation can induce synchronization in networks of chaotic maps.

Date: Thursday, May 22, 2025
Time: 13:30
Place: Mathematics Seminar Room, SA – 141