

Investigating Mesoscale Structures of Networks via Transport Properties

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Room 118 Nieuwland Science Hall

Refreshments @ 3:30 in 202 NSH

Networked systems have been investigated within and across a variety of different disciplines for quite a while now. For more realistic and rigorous approaches in practice, it is necessary to consider realistic situations with only partial information available, dynamical properties such as transport on top of topological (connection) properties, and mesoscale structures such as modular or core versus peripheral subparts. In this talk, I will take partial geometric information and introduce the network navigation strategy called greedy spatial navigation to quantify the navigability of a given network embedded in a metric space. As an example of mesoscale structure revealed by transport, I will present core-periphery structures in terms of transport properties compared to other methods based on relative edge density. Various types of real network data including social, financial, migrational, and artificial/biological transport systems are examined for all the topics covered. In particular, I will suggest that biological systems such as fungal and neuronal networks both in terms of functional and phys(iolog)ical connections are important candidates for future studies.