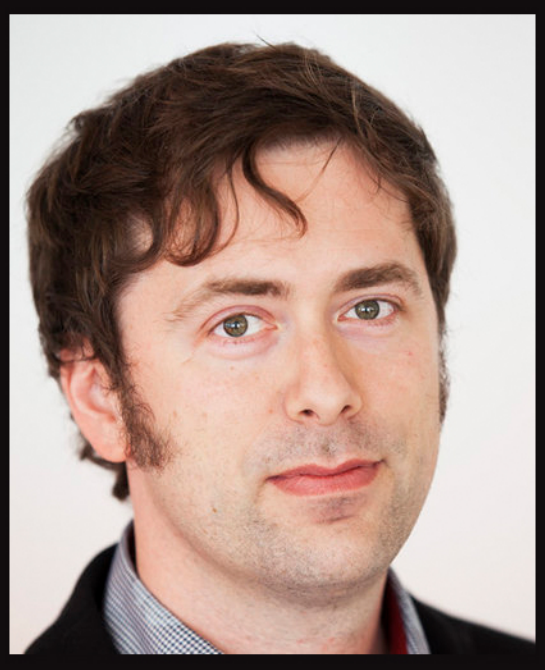

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Temporal networks of human interaction

Since the turn of the millennium, networks have become a universal paradigm for simplifying large-scale complex systems and studying their system-wide functionalities. Simultaneously, there is considerable evidence that temporal structures, such as the burst-like behavior of human activity, affect dynamic systems on the network. These two lines of research come together in the study of temporal networks. Over the last ten years, there has been a growing interest in analyzing and modeling datasets in which we not only know which units interact (like in a traditional, static network) but also when the interactions occur. Just like static network analysis, the development of temporal network theory has been accelerated by the availability of new datasets. It should be noted that temporal networks are more than just extensions of static networks—they are, e.g. (unlike the simple, directed, weighted, and multiplex networks), not transitive. In other words, if A and B are connected, and B and C are also connected, this does not imply that A and C are connected. Perhaps, for this reason, temporal network theory has focused less on structural measures and studies of simple evolutionary models and more on randomization studies and the simulation of spreading on empirical contact data. I will describe the state of the field, my contributions (mostly about how temporal contact patterns affect infectious disease spreading), and discuss some future challenges.

Virtual Colloquium
3:30 to 4:30 p.m. Eastern Time (U.S. and Canada)
Wednesday, October 28, 2020