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Time scales and dynamical processes in activity driven networks NICOLA PERRA, BRUNO GONCALVES, Northeastern University, ROMUALDO PASTOR-SATORRAS, UPC, ALESSANDRO VESPIGNANI, Northeastern University — Network science has undergone explosive growth in the last ten years. This growth has been driven by the recent availability of huge digital databases, which has facilitated the analysis and construction of large-scale networks from real data and the identification of statistical regularities and structural principles common to many systems. Network modeling has played an essential role in this endeavor; however models are chiefly constructed by considering as relevant ingredients only the connectivity and statistical properties of the networks, while disregarding the actual agents' behavior. Here we address this challenge by measuring the agents' interaction activity in real-world networks and defining a minimal model capable of reproducing the intrinsically additive nature of connectivity patterns obtained from time-aggregated network representations. Additionally, we demonstrate that processes such as epidemic and information spreading in highly dynamical networks can be better characterized in terms of agent social activity than by connectivity based approaches

- Prefer Oral Session
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