
DY 18: Networks: From Topology to Dynamics I (with BP, SOE)

Time: Wednesday 10:15–10:45

Location: GÖR 226

Invited Talk

DY 18.1 Wed 10:15 GÖR 226

Impact of Single Links in Growing Networks — •JAN NAGLER^{1,2} and MARC TIMME^{1,2,3} — ¹Max Planck Institute for Dynamics and Self-Organization, Göttingen — ²Institute for Nonlinear Dynamics, Faculty of Physics, University of Göttingen — ³Bernstein Center for Computational Neuroscience (BCCN) Göttingen

How a complex network is connected crucially impacts its dynamics and function. Until recently, random percolation processes were

thought to exhibit continuous transitions in general. Numerical evidence for discontinuous changes of the order parameter in certain percolation processes, however, has triggered an ongoing scientific controversy about the conditions for discontinuous phase transitions in percolation [Achlioptas, D'Souza, and Spencer, *Science* 323, 1453 (2009); Nagler, Levina, and Timme, *Nature Physics*, in press; see also references therein.]. We study both numerically and analytically under which conditions certain "competitive" percolation processes exhibit macroscopic jumps in the order parameter.