

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Diffusive dynamics on complex weighted networks ROMUALDO PASTOR-SATORRAS, ANDREA BARONCHELLI, Universitat Politecnica de Catalunya — Diffusive processes describe a large set of phenomena occurring on natural and social systems modeled in terms of complex weighted networks. In this talk we will present a general formalism that allows to easily write down mean-field equations for any diffusive dynamics on weighted networks, and to propose the concept of an annealed weighted network, in which such equations become exact. The analysis of simple processes, such as the random walk or the Voter process, reveals a strong departure of its behavior in quenched real scale-free networks from the mean-field predictions. These observations shed light on mean-field theory on weighted networks and on its range of validity, warning about the reliability of mean-field results for more complex dynamics.

Romualdo Pastor-Satorras
Universitat Politecnica de Catalunya

Date submitted: 20 Nov 2009

Electronic form version 1.4