FIRST WORKSHOP
"DYNAMICAL SYSTEMS APPLIED TO BIOLOGY AND NATURAL SCIENCES "

1-3 FEBRUARY 2010
CMAF, LISBON UNIVERSITY

ABSTRACT | Stefan Wieland

Title

Steady-State Topologies of SIS Dynamics on Adaptive Networks

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Abstract

Disease awareness in SIS dynamics can be modelled with adaptive contact networks, where susceptibles try to evade infection by changing their contact patterns depending on the disease status of their neighbours. This interplay of disease dynamics and network alteration adds new phases to the standard SIS model in the pair approximation (Gross; PRL 96, 208701-4) and, in stochastic simulations, lets network topology settle down to a steady state that can be static (in the frozen phase) or dynamic (in the endemic phase). We show that, in the endemic phase, this steady state does not depend on the initial network topology, only on the disease and rewiring parameters and on the link density of the network, which is conserved. We give an analytic description of the structure of this co-evolving network of infection through its steady-state degree distribution.