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FACULTY OF SCIENCE

Department of Physics & Institute of Computational and Theoretical Studies

JOINT COLLOQUIUM

Dynamics in Multiplex Networks

BY

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3:30pm – 4:30pm (Tea will be served)

T909, Science Tower, HSH Campus

Abstract

We will show some of the recent result in our group concerning dynamics in multiplex networks. On the one hand we consider multiplex networks as set of nodes in different layers. At each layer the set of nodes is the same but the connections among the nodes can be different in the layers. Furthermore the connections among the layers is described by a “network of layers”. For the most simple processes in the system we show how the eigenvalues and eigenvectors of the whole system depend on those of the individual layers and also on those of the network of layers. Additionally we have studied different processes across the layers (diffusion) and between the layers (reaction). In this case Turing patterns appear as an effect of different average connectivities in different layers. As a particular case of multiplex network, one can also analyze networks that change in time, since in this case each layer of the multiplex corresponds to a snapshot of the interaction pattern. For this situation, we have shown that there are different mechanisms that dominate the diffusion of information in the system depending on the relative effect of mobility and diffusion among the nodes.

All Interested Are Welcome!