CEU CENTRAL EUROPEAN UNIVERSITY

STRUCTURE AND DYNAMICS OF MULTIPLEX NETWORKS

A PUBLIC TALK BY

FEDERICO BATTISTON

School of Mathematical Sciences, Queen Mary University of London, UK
Brain & Spine Institute, CNRS, Paris, France

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ABSTRACT | Many real-world complex systems consist of a set of elementary units connected by relationships of different kinds. All such systems are better described in terms of multiplex networks, where the links at each layer represent a different type of interaction between the same set of nodes, rather than in terms of (singlelayer) networks. In this talk I will introduce multiplex networks and several metrics to measure multiplexity at different scales. Measures are validated and applied to real-world systems with examples from collaboration networks, terrorist networks and the brain. I will also show how multiplexity can produce the emergence of qualitatively novel dynamical behavior, focusing on the case of social dynamics.

BIO | Federico is a PhD student at Queen Mary University of London in the Complex Systems and Networks Group under the supervision of Vito Latora and member of the EU-FP7 project LASAGNE on multilayer networks. He is the Chair of the Young Researchers Network on Complex Systems, and an elected member of the council of the Complex Systems Society. He is also a former student of the Complex Systems Summer School in Santa Fe. His research interests include network theory, complex systems and statistical physics and their applications to interdisciplinary topics, such as socioeconomic systems, urban systems and the brain. He is currently based at the Brain & Spine Institute in Paris, for an extended visiting period at the Aramis Lab.

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