AKSOE 9: Award Ceremony: Young Scientist Award for Socio- and Econophysics

Time: Tuesday 16:00–18:00 Location: H10

Invited Talk AKSOE 9.1 Tue 16:00 H10

Statistical Mechanics of socio-economic systems — •Matteo Marsili — Abdus Salam International Centre for Theoretical Physics, Strada Costiera 10, 34014 Trieste, Italy

The interest of statistical physicists for collective phenomena in the socio-economic sciences is not new, specially among German physicists. What is new is that socio-economic collective phenomena themselves have increased in their pervasiveness and complexity at a very fast rate. Phenomena such as web communities or e-commerce, for instance, grow and change at a rate which is probably much faster than our ability to understand their collective behavior and, in case, how they will change our societies.

In this talk, I will take financial markets as a prototype system of interacting agents, and I will review the non-trivial statistical properties which characterize their collective behavior. In particular, I will focus on multi-asset markets and discuss their complexity in terms of the correlation matrix of stock returns at different time-scales. This clearly reveals that, as in classical mechanics, it makes sense to separate the dynamics of the "center of mass" from that of relative coordinates. Finally I will offer a simple phenomenological model for the center of mass dynamics which accounts for the impact of optimal portfolio strategies. This is able to reproduce the main statistical features observed in empirical data and suggests that real markets operate close to a critical point which marks the onset of a dynamical instability.

— Presentation of the Young Scientist Award for Socio- and Econophysics 2007 —

— Awardee's Talk —