

SOE 7: YSA Award Ceremony: Young Scientist Award for Socio- and Econophysics

Time: Monday 16:00–19:00

Location: H37

Invited Talk

SOE 7.1 Mon 16:00 H37

Mind the gap: What can economics, social insects and statistical physics learn from each other? — ●ALAN KIRMAN — GREQAM, EHESS, 2 Rue de la Charite, 13002 Marseille, France

Macroeconomists have been preoccupied by the analysis of equilibrium states and their properties. They assume that the economy will automatically find an equilibrium, from which it is perturbed only by exogenous shocks. Out of equilibrium behaviour is disregarded. The current crisis has shown again however, that what is needed, are models of the economy as a complex evolving system which may undergo sudden and radical endogenous changes. Interaction among the individuals, groups and institutions in the economy produces aggregate phenomena which are intrinsically different from the behavior of the individuals themselves. Collective results may be more or less *rational* than individual behavior. The gap between individual and collective rationality is real and important. "Swarm intelligence" reveals the potential increase in the cognitive capacity of a collectivity. Herd behaviour on markets shows how imitation can generate bubbles and crashes. Simple models based on approaches from other disciplines, statistical physics in particular, will allow us to achieve the important task of analysing the erratic evolution of the economy and the emergence of crises.

Presentation of the Young Scientist Award for Socio- and Econophysics to Vittoria Colizza.

Prize Talk

SOE 7.2 Mon 17:00 H37

Fighting infectious diseases in a complex world — ●VITTORIA

COLIZZA — INSERM & Universite Pierre et Marie Curie (Paris, France) — ISI Foundation (Turin, Italy)

New advances in science and medicine help us gain ground against certain infectious diseases, yet new infections continue to emerge that spread rapidly into the population and may reach pandemic proportions. We face a perpetual challenge against the capacity of new pathogens to lead to emerging epidemics. And our global, mobile and interconnected world contributes with dangerous mechanisms that may potentially greatly magnify the global burden of diseases, causing significant human and economic costs - namely, the increasing complexity of our social relations, trade systems, and mobility patterns. The ICT and 'Big Data' revolution enabled us to start quantifying this complexity and to envision modeling frameworks able to confront this epidemic reality. Models integrating mathematical epidemiology with complex systems and statistical physics approaches, computational sciences and Geographic Information Systems offer new tools as important as medical, clinical, genetic or molecular diagnosis tools in the fight against infectious diseases. In the talk I will report on our efforts in the development of data-driven modeling applications to infectious disease spread, from the global scale to the individual host level, addressing the effect of complexity inherent in the multiple facets of reality on the properties of epidemic propagation and on the efficacy of the intervention strategies that can be envisioned.

After the awardees talk, there will be a social gathering with beer and pretzels in the close-by Chemistry cafeteria (opposite building, close to lecture hall H34)