UNIVERSITÀ DEGLI STUDI DI PADOVA

DIPARTIMENTO DI SCIENZE STATISTICHE

Seminar

STATISTICAL PHYSICS APPROACHES TO SOCIO-ECONOMIC ISSUES

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ICTP – International Center for Theoretical Physics

« Abdul Salam », Trieste

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Room Benvenuti | Campus S. Caterina

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Abstract

"I can calculate the motion of erratic bodies, but not the madness of a multitude”. Three centuries after Sir Isaac Newton (reportedly) surrendered with these words to the bewildering complexity of economies and financial markets, we still have nothing like Newton's law in economics. Even though we’ll never find the “equation of motion” of economies and societies, the collective behaviour of many interacting agents exhibits statistical regularities that can, potentially, be captured by simple models. The statistical mechanics analysis of these models may reveal the origin of robust and predictable typical behaviours, which can be compared to empirical data. This may also provide hints on possible determinants and some understanding on unintended consequences. The aim of the seminar is to present examples of this approach, ranging from shadow banking, to financial crises, inequality and growth.

Short Bio

Matteo Marsili is a theoretical physicist who gained his PhD from SISSA, Trieste in 1994. He joined the Abdus Salam ICTP, a research center in theoretical physics in Trieste, as a Research Scientist, where, he's currently the coordinator of the Quantitative Life Sciences Section. He is interested in understanding how collective behaviour results from the interaction of simple units, be them particles in physics, neurons in a brain tissue or traders in financial markets. He exploits techniques that have been developed in statistical physics to unveil the "un-intended consequences" of interdependencies in other domains of life sciences. His research interests range from non-equilibrium statistical physics and critical phenomena to economics and finance. Lately, his interest has focused on statistical inference from high dimensional data, in e.g. systems biology and neuroscience, and it's connection with critical phenomena.