SOE 5: Award Session: Young Scientist Award for Socio- and Econophysics (YSA)

Time: Monday 16:15–18:00 Location: MA 001

Invited Talk SOE 5.1 Mon 16:15 MA 001

Radical Complexity and Bounded Rationality — •Jean-Philippe Bouchaud — CFM, 23 rue de l'Université, 75007 Paris

Traditional economic theory assumes that agents are rational, or at least that they learn to be after interacting with their environment. As a schematic model of the complexity economic agents are confronted with, we introduce the "SK-game", a discrete time binary choice model inspired from mean-field spin-glasses. We show that even in a completely static environment, agents are unable to learn collectively optimal strategies. This is either because the learning process gets trapped by a sub-optimal fixed point, or because learning never converges and leads to a never ending evolution of agents intentions. Contrarily to the hope that learning might save the standard rational expectation framework in economics, we argue that complex situations are generically unlearnable and agents must do with "satisficing" solutions, as argued long ago by Herbert Simon.

Presentation of the Award to the Awardee

Prize Talk SOE 5.2 Mon 17:00 MA 001

Information and Infections Dynamics in Social Networks — •Viola Priesemann — Max Planck Institute for Dynamics and Self-Organization — Georg August University Göttingen

Both information and misinformation spread impact societal dynamics. However, the mechanisms and extent are unclear. To study the impact of information spread on contact behavior, the recent pandemic provided a prime data set. In a model, we show that complex, even chaotic infection dynamics can emerge if one assumes that the population reacts to high case numbers by mitigating the spread of the disease, and vice versa. Interestingly, this novel, complex endemic regime can optimize the cost of mitigation and infections, pointing to its relevance for endemic disease dynamics. In addition, we analyzed the information spread in our Telegram dataset (2.4 billion messages). The different channels were clearly clustered, and the topics and message frequencies showed pronounced relations to pandemic events. Together, these studies provide a novel window into the entangled dynamics of information spread, opinion and human behavior.

After the Award Session, there will be an informal get-together with beer and pretzels at the poster session