

Speaker: Federico BATTISTON (Central European University, Hungary)

Title: **Higher-order interactions in complex networks: an opportunity for new physics**

Abstract:

For many years, complex networks have represented the main paradigm to model the dynamics of interacting systems. Collections of nodes and links, networks are intrinsically limited to describing pairwise interactions. Yet, from biological to social and man-made systems, higher-order interactions, i.e. interactions in groups of three or more units, are ubiquitous. Here, I will (i) introduce higher-order structures, such as hypergraphs and simplicial complexes, as a better tool to map the organization of many social, biological and man-made systems, (ii) discuss recent evidence of novel collective behaviours induced by higher-order interactions, and (iii) outline key challenges for the new physics of higher-order systems.