

WORKSHOP ON DYNAMICAL PROCESSES ON COMPLEX NETWORKS



May 13 – 17, 2024

at Instituto de Física Teórica - UNESP, Brazil

CONFIRMED SPEAKERS

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Guilherme Ferraz de Arruda (CENTAI I., Italy)
Marcelo Avila (U. Mayor de San Andrés, Bolivia)
Antonio Batista (U. Estadual de Ponta Grossa, Brazil)
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Sarika Jalan (Indian I. of Technology, India)
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Complex systems are characterized by a large number of units, such as particles, individuals or neurons, that interact typically with a few neighbors but lead to the emergence of large-scale collective behavior. Networks provide a natural representation of these systems, where nodes play the role of the units, and links between nodes indicate pairwise interactions. The distribution of links among the nodes is a key property of networks, defining how the units of the system interact. Links may follow simple rules, such as regular lattices or random connections, or may be highly heterogeneous, displaying power law distributions. More recently, the concepts of multilayer and higher-order networks have emerged to describe interconnected sets of networks and many-body interactions, where single-layer networks are generalized to simplicial complexes or hypergraphs.

Two of these processes have become particularly important and will be the focus of this workshop in terms of applications. The first is the spreading of infectious diseases and the dissemination of information. As disease and information propagation depend critically on the network of contacts between people, understanding how the topology of these networks affects the spreading and how that, in turn, modifies the network via quarantine, vaccination, use of masks, or death, has become a major topic of research. A second topic to be discussed in the workshop is the synchronization of coupled oscillators. Understanding how independent oscillators synchronize their motion when coupled together has become an important area of research, both in terms of applications to neuronal dynamics and swarms, and to basic science, characterizing its phase transitions, hysteresis, and dynamical properties.

There is no registration fee and limited funds are available for travel and local expenses.

**Registration deadline:
March 24, 2024**

**Online registration and more information:
<https://www.ictp-saifr.org/wdpcn2024/>**



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