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Network dynamics and complexity

Venue: Polo scientifico e tecnologico “Fabio Ferrari”, Povo 1 Building – Room A107

The event is organized by the [Department of Physics](#) [1] and the [CIMEC, Center for Mind/Brain Sciences](#) [2] of the University of Trento.

Introduction

The field of the workshop “Network dynamics and complexity” encompasses a number of research areas that are currently very relevant for Physics, Biology, Neuroscience and Psychology.

In **Physics**, an important underlying aim is the identification of universal laws (e.g., scaling laws) that apply across very different systems; pursuing this goal requires the development of robust time-series analysis and system modelling tools.

In **Neuroscience** there is an interest in modelling and characterizing the complex relationships between brain networks in health and in disease, at rest or in response to external stimuli.

In **Psychology**, a main research topic consists in understanding whether fixed network structures mediate function or whether different functions instantiate qualitatively different networks.

Goal of the workshop

This workshop aims to **bring together local researchers working on network structure, dynamics and complexity**.

The **format** of the workshop is tailored to promote **informal discussion** and **brainstorming** and, possibly, **new collaborations on common research areas**.

Program

List of speakers

- **Ludovico Minati**
CIMEC - Center for Mind/Brain Sciences, University of Trento
Remote synchronization of amplitudes across an experimental ring of non-linear oscillators
- **Alessio Lugnan**
Department of Physics, University of Trento
Photonic integrated circuits as reservoir computing platform
- **Uri Hasson**
CIMEC - Center for Mind/Brain Sciences, University of Trento

The impact of context and plasticity on functional and anatomical brain networks

- **Jorge Jovicich**

CIMeC - Center for Mind/Brain Sciences, University of Trento
Evaluating MRI-derived neural dynamic markers

- **Angelo Bifone**

Istituto Italiano di Tecnologia, Rovereto (Trento)
Modular organization of resting state functional connectivity networks: breaking the resolution limit by surprise

- **Albrecht Haase**

Department of Physics, University of Trento
Spatially resolved time-frequency analysis of odour coding in the insect's olfactory system

- **Leonardo Ricci**

Department of Physics, University of Trento
Can we distinguish a noisy network from a chaotic one?

- **Stefano Panzeri**

Istituto Italiano di Tecnologia, Rovereto (Trento)
Dynamics and information coding in networks of neurons

- **Davide Bigoni**

Department of Civil, Environmental and Mechanical Engineering, University of Trento
Self-oscillating elastic systems

- **Emanuele Olivetti**

CIMeC-FBK, Trento
Detecting changes in brain connectivity across time

- **Mario Lauria**

COSBI, Computational Systems Biology, Microsoft Research and University of Trento, Rovereto (Trento)
Rank-based signatures: a novel approach to complex data analysis

- **Stefania Ottaviano**

CREATE-NET, Trento
The influence of the population contact network on the dynamics of epidemics transmission

Target audience

Registration

Co-Chairmen

- **Leonardo Ricci**, Department of Physics
- **Uri Hasson**, CIMeC, Center for Mind/Brain Sciences

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Links:

[1] <http://www.physics.unitn.it/en>

[2] <http://web.unitn.it/en/cimec>