



P A D O V A
neuroscience
C E N T E R

17 NOVEMBER 2025 3:00 pm

SALA SEMINARI VIMM

(Via Giuseppe Orus 2, Padova)

PNC SEMINARS

A talk by Sara Sommariva
(University of Genova)

IDENTIFY FUNCTIONAL CONNECTIVITY DIFFERENTIAL GRAPHS IN DLB PATIENTS: FROM NETWORK BASED STATISTICS TO FUNCTIONAL GRAPHICAL MODELS

Neurodegenerative diseases such as Dementia with Lewy Bodies (DLB) are heterogeneous diseases characterized by multiple clinical phenotypes. Understanding the relationship between these phenotypes and the underlying brain activity and functional connectivity is a key step for a timely diagnosis and a personalized treatment.

In this talk, I will discuss some recent methodological approaches for comparing brain functional connectivity graphs in groups of patients with different clinical features starting from electroencephalographic (EEG) data.

Specifically, I will first describe a classical approach based on network based statistics which aims at identifying connected subgraphs in coherency-based functional connectivity matrices that show significant between-group differences. In a recent work we showed that this approach was able to highlight an increased connectivity in DLB patients with rem sleep behaviour and in those with visual hallucinations.

Then I will present a more recent approach based on conditional functional graphical regression models for comparing functional connectivity graphs when accounting for multiple covariates.

Biography

Sara Sommariva is Assistant Professor (RTDa) in Statistics at the Department of Mathematics of the Università di Genova. After obtaining a PhD in Mathematics and Applications in 2017 at the Università di Genova, she has been a postdoctoral researcher in different national and international institutes, including the Neuroscience and Biomedical Engineering Department at Aalto University, Finland, the Department of Mathematics at Università di Genova, Consiglio Nazionale delle Ricerche. Additionally, in 2021 she co-founded the startup company Bayesian Estimation for Engineering Solutions (BEES) srl.

Her research mainly focuses on the development of computational statistics methods for the study of function brain connectivity from magneto/electroencephalographic time series, and for the analyzing of omics data and targeted drugs development in cancer.