



Thesis Project Form

Title (tentative): Mapping and modeling the architecture of emergent phase lags in oscillatory resting-state brain dynamics

Thesis advisor(s): Arnulfo Gabriele, J Matias Palva

E-mail: Gabriele.Arnulfo@unige.it

Address: Via All'Opera Pia, 13 - 16145 Genova

Phone:

Description

Motivation and application domain

The human brain exhibits complex temporal dynamics that regulate functional responses to endogenous/exogenous triggers. These dynamical responses emerge by the synchronised interactions between group of neurons.

General objectives and main activities

The main objective is to study the cortical architecture of phase lags in the human brain

Main activities include:

1. extending current Kuramoto model to include phase lags between oscillators
2. fit the emerging dynamics from the model to real dynamics extracted from electrophysiological observations

Training Objectives (technical/analytical tools, experimental methodologies)

The student will be involved in the research activities of the Laboratory of Neuroscience and Biomedical Engineering,
â€¢ The project consists of an initial phase of bibliographic research, in order to gain knowledge of the state of the art.
â€¢ Subsequently, the student will produce a code to analyze the electrophysiological recordings
â€¢ The last step is the interpretation of the results obtained with the help of a clinician.

Place(s) where the thesis work will be carried out:

Additional information

Maximum number of students: 1

Financial support/scholarship: Erasmus