

# Interaction of neuronal oscillations in multiple spatio-temporal scales: from methods to cognition

## Organizer:

*Laura Marzetti*

University of Chieti-Pescara, Chieti, Italy

Interactions between brain rhythms in the [1-100] Hz frequency range, which correspond to time scales relevant to behavior, emerge from spatially distributed networks and represent a mechanism for the integration of information across space and time to support cognitive processing. Clearly, being able to understand this mechanism would have a great impact on the notion of brain networks, e.g. by allowing for a multiscale dynamic characterization. Cutting-edge research both from the methods and the neuroscience side is currently performed to highlight the cognitive relevance of CFC.

This symposium, by bringing together experts in methods and neuroscientists, will offer the OHBM attendees a unique opportunity to learn the most recent methodological developments in the field, as well as to familiarize with the opportunities offered by these approaches to address system neuroscience questions with either non invasive or invasive electrophysiology. Specifically, the learning objectives of this symposium will cover the understanding of: i) cutting edge methods to address the question of cross-frequency coupling through electrophysiology, ii) the cognitive relevance of cross-frequency coupling, iii) the use of cross-frequency based quantities to decode brain intention and action.

## Symposia Schedule:

8:0-8:15

### **Cross-frequency synchronization in MEG/EEG: methodological considerations and empirical evidence.**

*Laura Marzetti, University of Chieti-Pescara, Chieti, Italy*

8:15-8:30

### **Analyzing higher harmonics of the alpha-rhythms**

*Guido Nolte, Department of Neurophysiology and Pathophysiology, Universitaetsklinikum Hamburg-Eppendorf, Hamburg, Germany*

8:30-8:45

### **Cross-frequency synchronization connects networks of fast and slow oscillations during visual working memory maintenance**

*Satu Palva, Neuroscience Center, University of Helsinki, Helsinki, Finland*

8:45-9:00

### **Decoding motor intentions and actions through cross-frequency coupling**

*Karim Jerbi, Prof, Département de Psychologie Université de Montréal, Montréal, Canada*

9:00-9:15

### **Questions and Answers**