

## **Talk 1: Estimation of cortical activity from non invasive EEG recordings for Brain Computer Interface applications**

*Fabio Babiloni*  
*University of Rome I, Italy*

The aim of this presentation is to analyze whether the use of the cortical activity estimated from non invasive EEG recordings could be useful to detect mental states related to the imagination of limb movements. Estimation of cortical activity was performed on high resolution EEG data related to the imagination of limb movements gathered in six normal healthy subjects by using realistic head models. Cortical activity was estimated in Region of Interest associated with the subject's Brodmann areas by using depth-weighted minimum norm solutions. Comparisons between surface recorded EEG and the estimated cortical activity were performed. Results suggest that the use of the estimated cortical activity for the motor imagery of upper limbs could be potentially superior with respect to the use of surface EEG recordings. This is due to a greater unbalance between the activity estimated in the contralateral and ipsilateral hemisphere with respect to those observed with surface EEG. These results are useful in the context of the development of a non invasive Brain Computer Interface.