



## SEMINAR

### **An application of EEG source analysis to find neural correlates of metacontrast masking**

**Maximilian Bruchmann**

*Institute for Biomagnetism and Biosignalanalysis  
University Hospital Muenster*

A common view in neuroscience is that Electro- and Magnetoencephalography (EEG and MEG) give precise and accurate information about when something happens in the brain but only roughly where. This view is only in so far justified as EEG and MEG researchers face the so called inverse problem, i.e. the mathematical impossibility to exactly calculate the neural sources of signals measured at the outside of the head. However, recent developments in source analysis techniques, especially current density reconstruction (CDR) methods, allow estimating these sources with rather high precision. We applied this method in a metacontrast experiment where the degree to which a target stimulus is consciously perceived is manipulated by varying the time between the onset of a target and a mask and their similarity. We found that the amplitude of an early visually evoked potential (P1) is decreased in conditions where subjects reported a low visibility of the target but not in conditions where visibility was high. The CDR shows that this effect is confined to early visual areas, contralateral to the stimulated hemifield. This result will be used to discuss on the one hand the benefits and limits of CDR methods concerning accuracy and precision and on the other hand whether a visual component as early as the P1 can be regarded as a neural correlate of consciousness.

**Date: Friday, October 29, 2010**

**Time: 11AM-12Noon**

**Location: N355-D (Engineering Building 1)**