

Signal processing and clinical applications of MEG and fMRI

Friday July 1, 2005 VU University Medical Center Amsterdam

Brain Imaging modalities like EEG, MEG and fMRI prove to be powerful tools to obtain information from the working human brain, non-invasively. This information, acquired in various experiments, has increased our scientific knowledge about the working of the human brain tremendously. Where EEG was traditionally used to study spontaneous brain activity, and fMRI to study the activity evoked by a stimulus or task, the insight has been obtained that also fMRI and the noise part of MEG/EEG evoked signals contain important information about spontaneous brain activity. In addition to the question *where* certain brain functions are located, the question on the *interaction* of brain regions has been addressed. Many clinical applications have evolved based on brain imaging.

Often these developments were based on new ways of analyzing the raw data, but also on the recording of different combinations of physiological signals (EMG/MEG, MEG/EEG, EEG/fMRI, etc). The VU University Medical Center is intensively involved herein. At present, Miss Fetsje Bijma has finished her Ph.D. research on methodology to improve localization of MEG generators, which are either caused by a stimulus, or are present autonomously. The public defense of her Ph.D. thesis provides a good opportunity to present signal processing and clinical applications of MEG and fMRI to a wider audience.

Venue: "Maaszaal", main building VUmc, De Boelelaan 1118, Amsterdam

Information / registration: Miss Erica Spijker, e-mail: e.spijker@vumc.nl, phone: 020 444 4118 (admission is free; registration is required and will be dealt with on a first come first serve basis)

Programme:

09.00-09.55	Registration/Coffee	
09.55-10.00	Prof.dr. R.M. Heethaar	Welcome and Introduction.
10.00-10.25	Prof.dr. C.J. Stam	Nonlinear analysis of functional connectivity in MEG. Applications to neurological disorders
10.25-10.50	Dr. G. Nolte	Detecting and localizing brain interactions from EEG/MEG data free of artifacts from volume conductions.
10.50-11.15	Drs. J.M. Schoffelelen	Cortico-spinal coherence as a mechanism of effective cortico-spinal interaction
11.15-11.30	Break	
11.30-11.55	Dr. J.C. de Munck	Integration of EEG, ECG and fMRI registrations
11.55-12.20	Dr. S.A.R.B. Rombouts	(F)MRI analysis and results in dementia
12.20-12.45	Drs F. Bijma	Mathematical modeling of MEG data
12.45-13.30	Lunch	
15.45-17.15	Ph.D. ceremony Miss F. Bijma	in the Aula of the VU