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Westfälische Wilhelms-Universität Münster

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ASA-Lab

Advanced EEG/ERP Analysis Workshop

In collaboration with

**Psychologisches Institut II
Westfälische Wilhelms-Universität Münster, Germany**

**Fliednerstr. 21
48149 Münster**

February 9 and 10, 2009

Monday, February 9: 13:00 – 19:00

13:00 Welcome and opening

A short welcome notice and introduction to the hosting research institute and its activities will be given.

13:15 Introduction to ASA-Lab

ASA-Lab is an innovative EEG/MEG and ERP recording and analysis system that offers the flexibility and accuracy needed for cognitive and clinical research applications. The main components and features of ASA-Lab, ranging from amplifier equipment to signal analysis and functional neuroimaging methods, will be introduced.

14:00 Data acquisition in real life: ERP hardware, caps, recording & stimulation

An oddball attention paradigm will be used to demonstrate the features of ASA-Lab and in particular the hardware and cap system in operation. ASA-Lab will be applied in a realistic situation to acquire ERP; practical questions concerning EEG recordings will be tackled.

15:30 Coffee break

15:45 Signal inspection and processing in time and frequency domain

The ASA-Lab signal processing tools will be presented. Visualization of raw EEG, single trial data and averages, 3D mapping in time and frequency domain and interaction with the data input for analysis will be discussed in detail.

17:15 Group study analysis with the ASA Experiment Manager

The ASA Experiment Manager is an addition to ASA-Lab that allows easy and intuitive organizing and efficient processing of group data and will be explained in detail. Moreover, several specialized tools for signal processing, such as eye blink correction, trigger extraction and conditioning, will be presented.

18:45 Summary and discussions

Tuesday, February 10: 8:30 – 13:00

08:30 Source analysis: Localization of brain functions based on ERP using dipole fit, MUSIC and (sw)LORETA and integration with MRI

We will apply source localization methods to a set of ERP data to illustrate the advantages and pitfalls of the specific methods. Practical questions such as accuracy concerns and statistical post-processing across subjects will be discussed.

09:30 Case 1: Analysis of an ERP group study

We will cover the complete analysis of an ERP group study in an interactive way so that every participant is able to carry out basic signal analysis in the ASA Experiment Manager.

10:30 Coffee break

10:45 Extensions to ASA Analysis: data exchange and automation

ASA-Lab is an open environment that offers a wealth of functionality for exchanging data with other tools such as MS-Excel, Matlab and others. File-based data exchange issues as well as script-based communication with ASA will be presented in practical examples.

11:45 MEG analysis and realistic head modeling

Analysis of MEG is technically similar to EEG analysis. However, several differences deserve attention and will be discussed, such as the montage per sensor type, frequency analysis of MEG and realistic head modeling.

12:45 Final Discussions and Closing

About the Organizers:

**Gerrit Hirschfeld, Psychologisches Institut II, Westfälische Wilhelms-Universität
Münster, Germany**

Frank Zanow, Advanced Neuro Technology (ANT), Enschede, Netherlands

ANT is based in Enschede, the Netherlands and was founded in 1996 as a spin-off company from the University of Twente. ANT's products utilize an innovative concept that links advances in neurological and cognitive research to related clinical applications. ANT scientific staff benefits from the knowledge and experience gained through many years of research at various leading neuroscience institutes. We offer high-quality and user-friendly systems widely used in neuroscience and neurodiagnostics.

Dr. Frank Zanow is one of the founders of ANT and has more than 15 years of experience with ASA.