eeprobe™

the most efficient approach to ERP signal analysis

eeprobe™ **is a complete software package for the study of event-related brain activity with high-resolution EEG/MEG. This package has been designed to suit the high standards of neuroscience research. The** eeprobe **software for data processing and ERP analysis has been developed for routine use at the Max Planck Institute for Cognitive Neuroscience in Leipzig, Germany, and is available for other institutions through ANT, The Netherlands.**

Complete in analysis

ERP investigations, both in psychophysiology research and clinical applications require a multitude of processing steps. The **eeprobe** software is thoroughly evaluated in advanced research, and contains all necessary procedures to perform a complete analysis of your data.

Powerful study automation

Analysis of large data sets is made efficient through advanced scripting possibilities. **eeprobe** is a flexible solution for automated processing of single subject and grouped data. Scripts can be created from within **eeprobe**.

Integration with high-density ERP data

eeprobe facilitates all different aspects of data handling. Moreover, **eeprobe** can be fully integrated with our **asa-lab™** ERP acquisition system. Alternatively, external data can be imported from a multitude of formats.

Integration with advanced analysis

Processing in **eeprobe** makes use of open file formats and is designed to integrate with **asa™**, the most advanced source analysis package available. Sophisticated source reconstruction techniques in **asa** allow you to overlay your dipole findings with the subject's MRI. **eeprobe** also supports SAS® and MATLAB®.

ERP processing

eeprobe™ can handle EEG/MEG as well as ERP data containing any number of channels, at any sampling rate. The **eeprobe** databrowser integrates all steps necessary for data processing:

- data management
- pre-processing
- averaging
- visualisation
- statistical analysis
- reporting

Reporting

eeprobe was designed with scripting in mind. Therefore, almost all of your analysis procedures can be included in a script to completely automate the processing and visualization. Reports are an efficient way to present different results together as a summary that can be used to quickly inspect your data.

Presenting eeprobe**:**

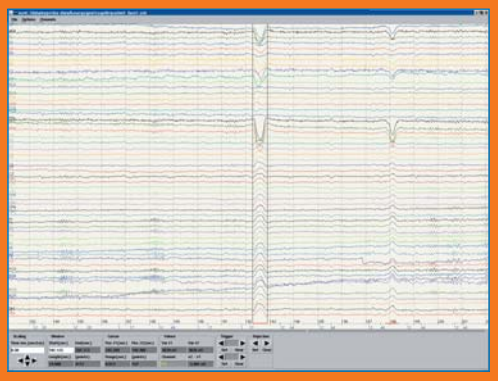

Figure 1: View, filter, and validate the EEG / MEG recordings.

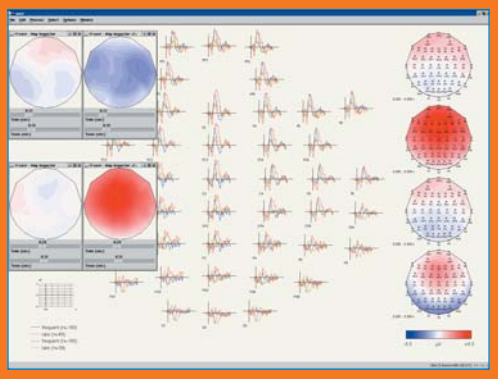

Figure 2: Design your own display configuration for average waveforms and maps.

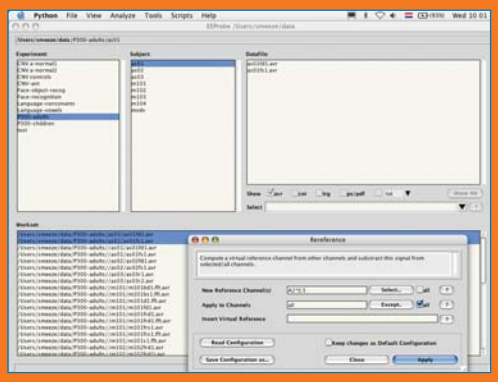

Figure 3: Organize and analyze using the data-browser (Mac OS X version shown).

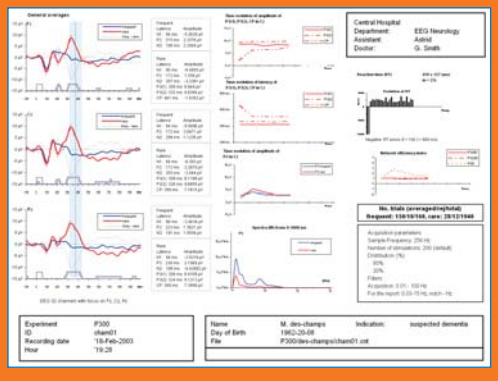

Figure 4: Example of P300 report using automatic scripting.

eeprobe™ analysis features:

Pre-processing
- Automatic artefact rejection, continuous and trial-based
- Detrending
- Reference / remontage
- Filtering
- Spatial filtering / interpolation
- EOG classification

Averaging
- EOG correction
- Conditional averaging
- Baseline correction
- Grand averaging (single subject and groups)
- Weighted average
- SNR assessment (e.g., standard deviation band)

Data management
- Data import / export *
- Merging / append recordings
- Merge average data
- Delete / rename channels
- Data selection, e.g., segmentation, cut epoch
- Data header info, e.g. processing history
- Event / trigger listing
- Trigger generation / re-coding
- Comprehensive configuration files for analysis & visualisation

Visualisation
- Two raw data viewers
- Manual artefact rejection
- Trial / average viewing
- Waveforms topographic view
- Waveforms time sequence map
- t-score topographic view
- Polarity switch
- Zoom raw data / averages
- 2D mapping
- Signal inspector

Analysis and tools
- Add / subtract waveforms
- Automatic amplitude / latency detection
- Vector browser for amplitude / latency extraction
- t-score
- Cross correlation
- Intra-class correlation
- Advanced, interactive filter design
- Smooth EEG data and waveforms (filtering)
- EEG / MEG and ERP downsampling
- Spectral transform
- Export to ASA
- Export to postscript
- Data Exchange with SAS® and Matlab® / Octave
- Powerful scripting, Makefile facility for study automation

)* **eeprobe *supports a multitude of dataformats. Please contact ANT for more information.*

Support & service

A standard two-year service agreement is included in the purchase of **eeprobe™**, in which free service and software updates are included. On-site installation support and training is optional. The **eeprobe** service involves expert consultation concerning ERP analysis. Through the continuing co-operation with the Max Planck Institute users will benefit from an ERP analysis package that has been thoroughly evaluated in a large number of studies. It is used worldwide by many researchers for their routine and advanced ERP studies.

Please contact us for more information about our **asa-lab™** high-density ERP acquisition system and related products.

System requirements:

The **eeprobe™** software is a Unix/Linux package, and runs on Intel platforms as well as on Mac OS X.

Minimal system requirements for a PC Linux configuration:
- Pentium 1GHz
- 256 MB internal memory
- X windows, minimal resolution 1024x768
- 50 MB free hard-disk space

Minimal system requirements for a Mac OS X configuration:
- Mac OS X 10.3 or higher
- 256 MB internal memory
- G4 processor 1GHz
- 150 MB free hard-disk space

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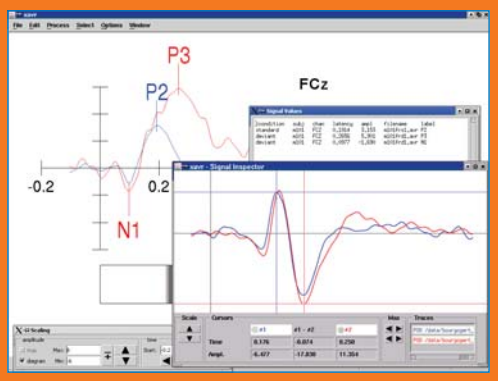
▶ *Presenting* eeprobe *(continued):*

Figure 5: Vizualize the signals in topographic view, and ...



... zoom in at the details using the signal inspector.

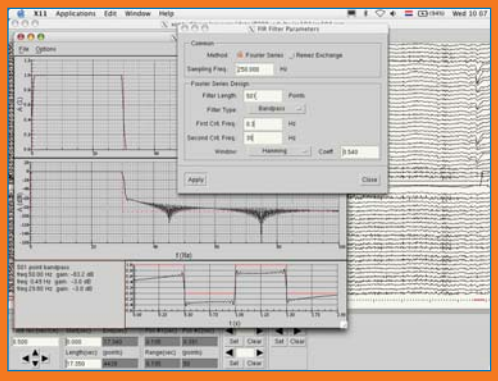


Figure 6: Design advanced filters graphically.

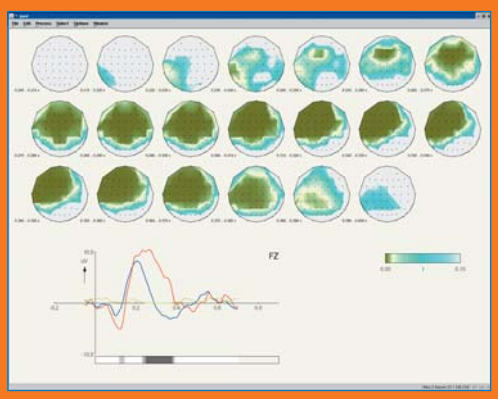


Figure 7: Explore the significance between conditions over electrodes.

A-N-T