



Signal Processing for Medical Applications – Frequency Domain Analyses

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Digital Signal Processing and System Theory



Topics of Presentation

Time Slots	Dates of Presentation
9:15 – 9:30	18-01-2013
9:35 – 9:50	25-01-2013
9:55 – 10:10	01-02-2013
10:15 – 10:30	
9:15 – 9:30	
9:35 – 9:50	
9:55 – 10:10	08-02-2013
10:15 – 10:30	
13:30 – 13:45	
13:50 – 14:20	CSR I
14:25 – 14:40	

Topics of Presentation

Topics	Student Name
1) Mapping the SNR of cortical sources in MEG/EEG	Ali Alfaraoon – 11/18-01-2013
2) Comparison of EEG and MEG in source level	Masoud Sarabi – 11/18-01-2013
3) Sparse source imaging	Jayjit Dutta – 11/18-01-2013
4) FEM for forward Modelling	Lasse Joldrichsen – 11/18-01-2013
5) Eigenspace projection beamformers	Roos Pascal – 18/25-01-2013
6) MEG/EEG source reconstruction using NUTMEG	Sven Jaschke – 18/25-01-2013
7) Mapping human brain with MEG and EEG	Julius Schmalz - 18/25-01-2013
8) Data driven time frequency analysis	Sumit Jha -18/25-01-2013
9) Power envelope correlations – source analysis	Mushfa Yousuf – 25/01-02-2013

Topics of Presentation

Topics	Student Name
9) Overview on artifact correction algorithms – Gradient	Necati Ugras Babacan – 25/01-02-2013
10) Spatial-temporal signal separation method	Andre Iwers – 25/01-02-2013
11) Phase amplitude coupling between neuronal oscillations of different frequencies	Sami Alkubti Almasri – 25/01-02-2013
12) Driver Fatigue: EEG and psychological assessment	Stephan Senkbeil – 01/08-02-2013

Topics of Presentation

Topics	Student Name
13) Review on directionality methods	Riya Paul – 01/08-02-2013
14) Review of brain connectivity in EEG/MEG	Sandra Schmidt – 01/08-02-2013
15) Resting state FMRI	Thi thu Hien Vu – 01/08-02-2013
16) New and emerging techniques for brain mapping	Balachandar Vittal – 01/08-02-2013
17) Analyzing effective connectivity in FMRI	Sönke Heidkamp and Christin Baasch -01/08-02-2013
18) NIRS development and field of application	Marco Klein – 01/08-02-2013

Grading system

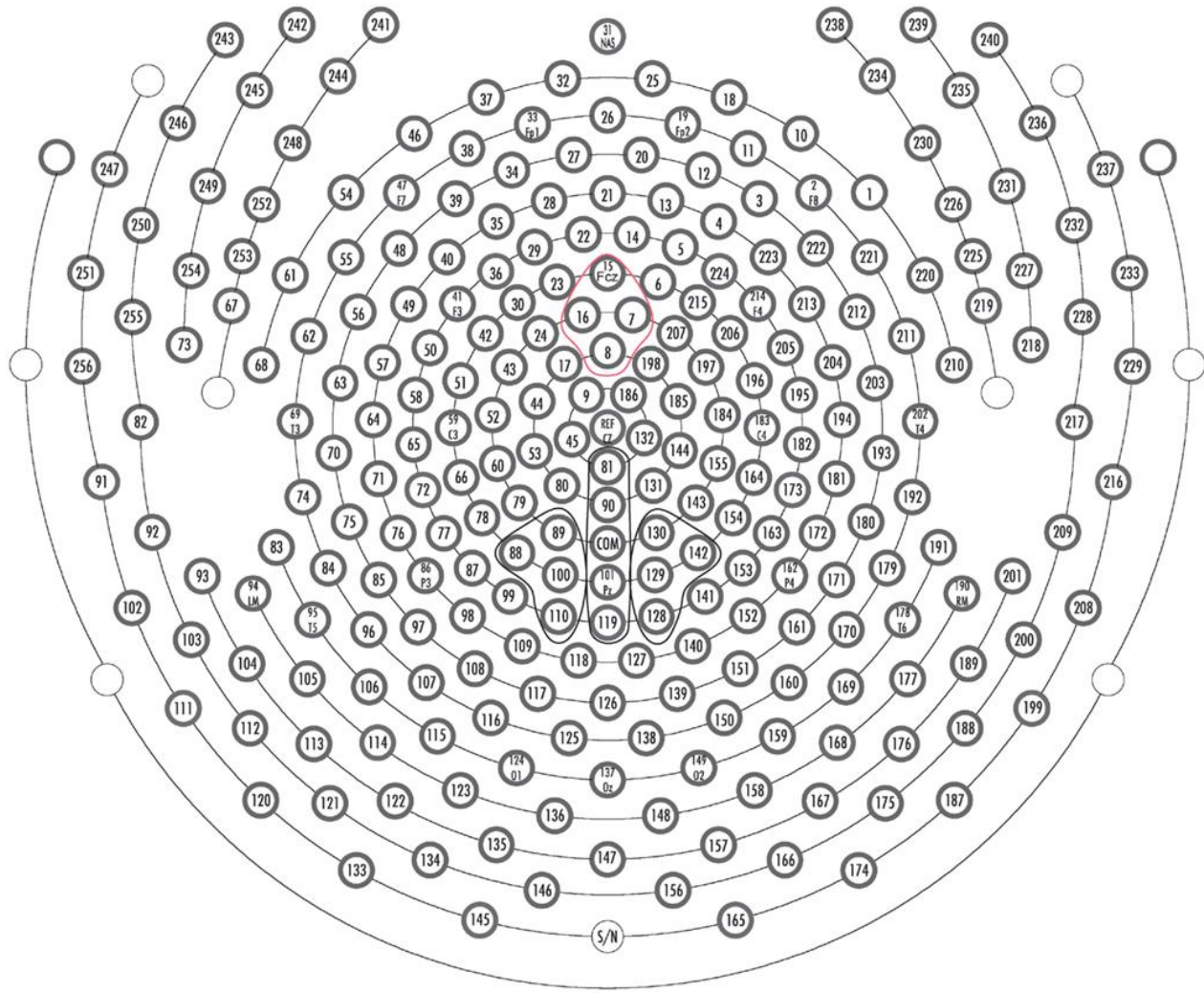
Paper: 50 %

- **Individual Initiative**
- **Understanding the subject**
- **Writing Skills**

Presentation : 50 %

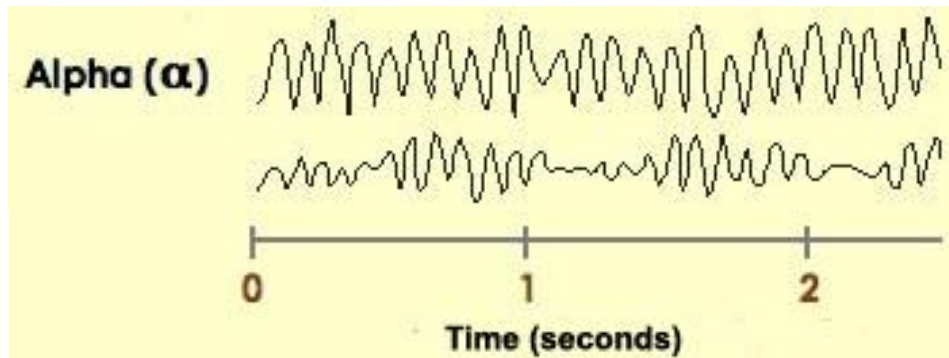
- **Timing**
- **Effective answering**
- **Attendance**

EEG Measurement

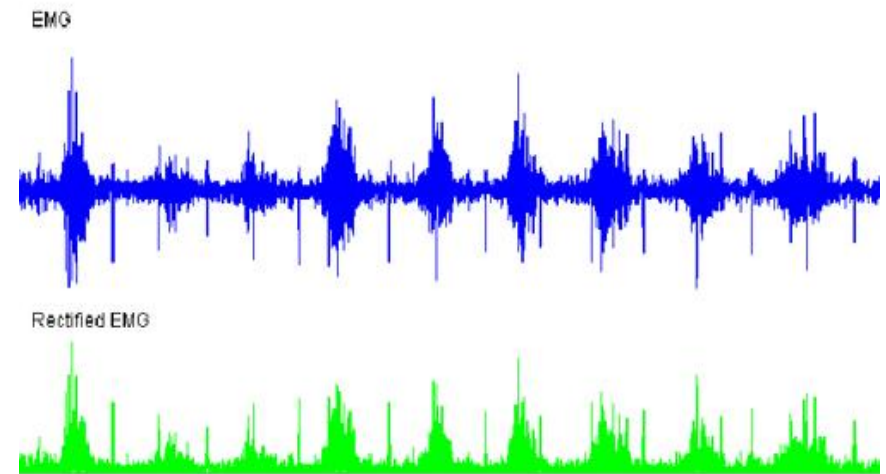
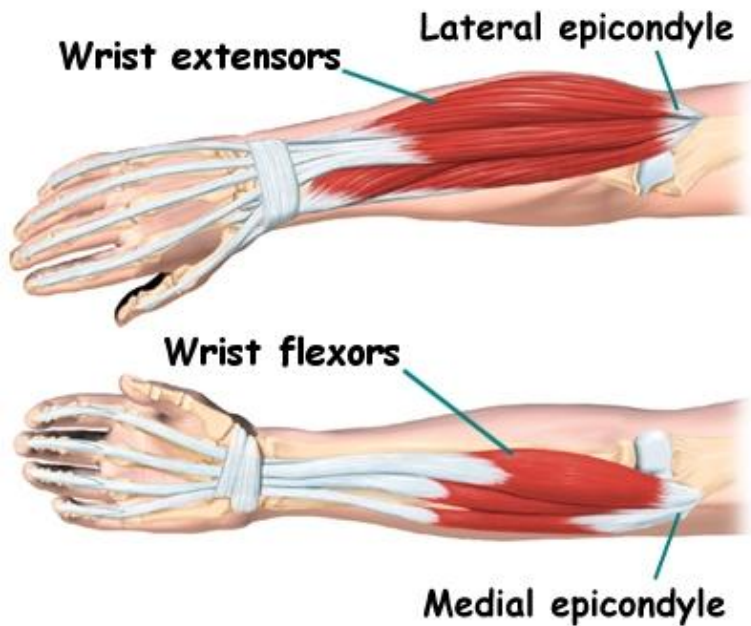


EEG Measurement

- Alpha Waves

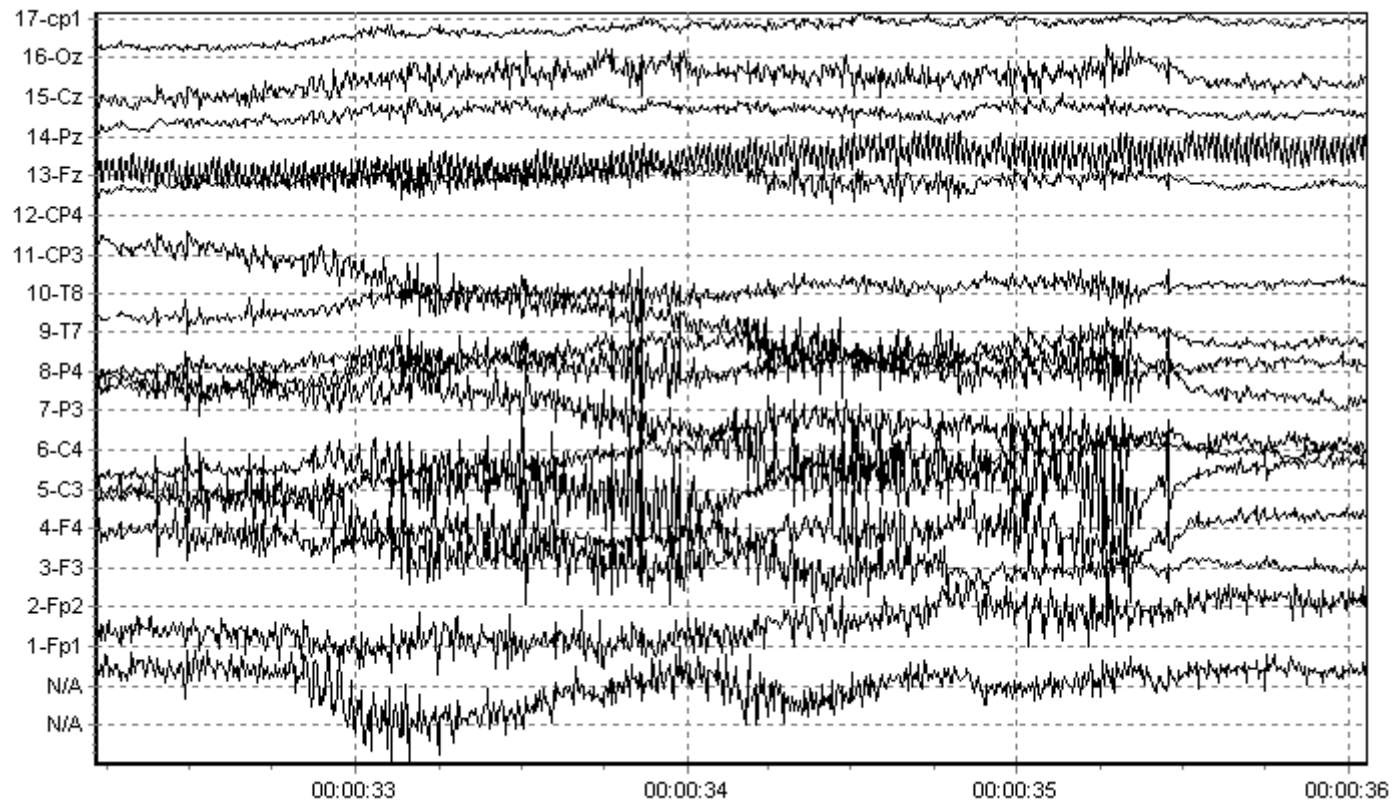


EMG Measurement



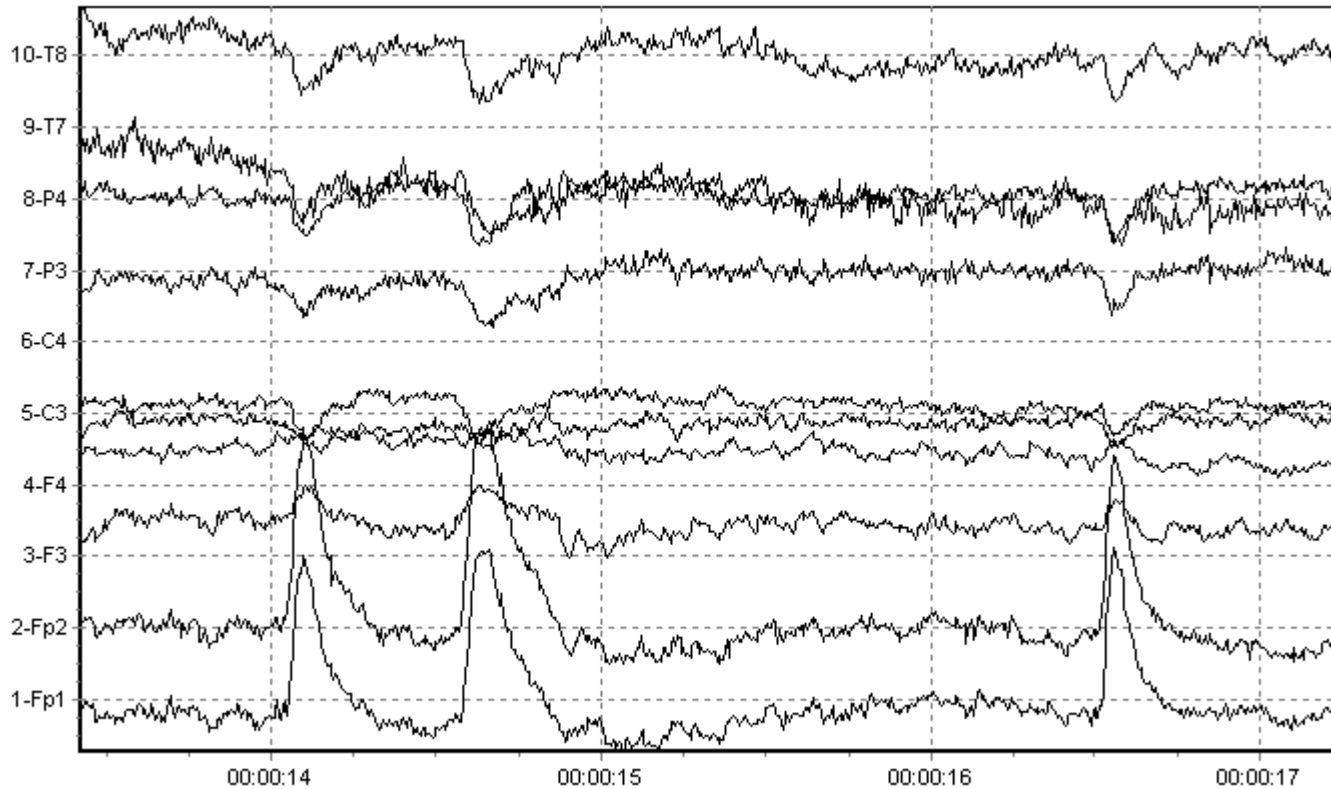
Artifacts

- Muscle artifacts



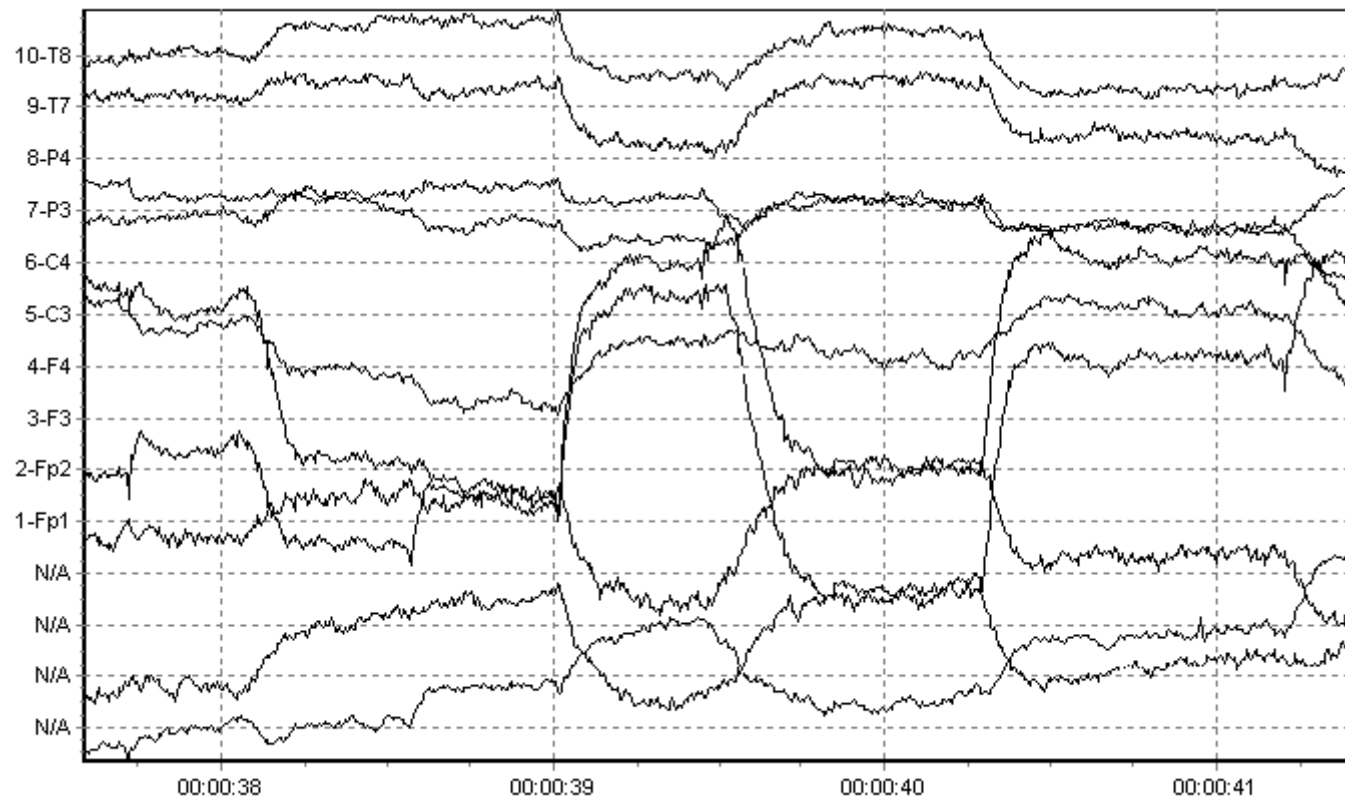
Artifacts

- Eye blink artifacts



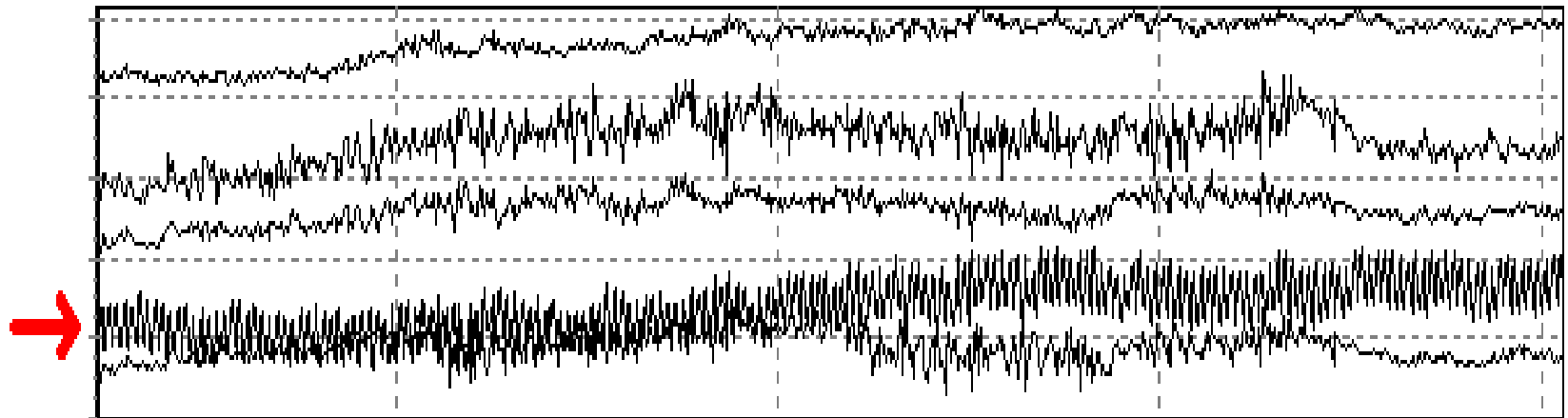
Artifacts

- Eye movement artifacts



Artifacts

- Mains Interference



End of Lecture 😊