

# SynAGE WORKSHOP

## ADVANCED EEG SINGLE-TRIAL ANALYSIS TECHNIQUES

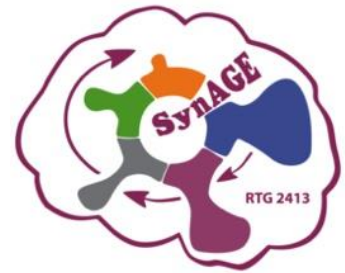
08.06.2022 | 09:00 a.m. – 4:30 p.m. | Main Campus, Building 24, R004

with Prof. Dr. Markus Ullsperger & Dr. Hans Kirschner

## PROGRAM

In this workshop, we will introduce participants to possibilities on how to combine model-based behavioural analyses with single-trial EEG data. Computational modeling promises to help gain mechanistic insights into the temporal dynamics of brain signals to further our understanding of important cognitive processes. These models are especially fruitful if they exploit temporal dynamics within trials, as well as variation in cognitive processes that occur from trial-to-trial. On the other hand, electrophysiological signals, despite being highly time-resolved, have a poor signal-to-noise ratio. In this workshop we will introduce participants to basic techniques of how to combine single-trial data with EEG analyses using robust regression in time- and frequency-domain data. Moreover, we introduce means to use single-trial EEG activity to predict behaviour. All participants should have basic knowledge in MATLAB as well as a solid understanding of ERP analysis methods.

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- 09:00 – 09:40 a.m. Why single-trial analyses?
- 09:40 – 10:25 a.m. EEG basics an Pre-processing
- 10:20 – 10:40 a.m. **Coffee break**
- 10:40 – 11:45 a.m. Setting-up your data and running a single-trial regression analysis with the STA-TB
- 11:45 a.m.–12:30 p.m. Time-frequency decomposition and single-trial analyses
- 12:30 – 01:30 p.m. **Lunch break**
- 01:30 – 02:15 p.m. Combine data across participants
- 02:15 – 03:00 p.m. EEG as predictor / MVPA – Part I
- 03:00 – 03:15 p.m. **Coffee break**
- 03:15 – 04:00 p.m. EEG as predictor / MVPA – Part II
- 04:00 – 04:30 p.m. Questions and Discussion

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Registration: [contact@synage.de](mailto:contact@synage.de)