



## BESA® Research Workshop Munich, 8<sup>th</sup> April – 10<sup>th</sup> April, 2019

*What can you expect?*

- A workshop program catered to the needs of beginners through to advanced source analysis – choose the program customized to your needs
- Hands-on analysis of a real dataset from raw data to source images and brain connectivity – step by step.
- Introductory presentations to help understanding the methodological background of BESA Research features.
- Please note: The program is subject to changes.

Day 1 Getting started, ERP, Discrete Source Analysis		
Introductory level	09:00-09:30	Introduction and initial setup
	09:30-10:30	Data Review (FFT, DSA, re-montaging), Preprocessing (interpolation, artifact handling, filtering)
	10:30-11:00	- Coffee break -
	11:00-12:30	Artifact Correction (automatic and manual), Trigger Handling (using attributes, defining conditions), Artifact Rejection, Averaging, Classic ERP Analysis (peak analysis, mean amplitudes)
	12:30-13:30	- Lunch break -
	13:30-14:30	Batch Processing (creating grand averages, combining conditions)
	14:30-15:00	- Coffee break-
Advanced level	15:00-16:30	Discrete Source Analysis (single dipoles vs. regional sources)
	16:30-17:00	Q & A



## Day 2 MRI co-registration, Source Imaging, Source Montages, and Time-Domain Beamformers

<b>Advanced level</b>	09:30-10:30	<b>Co-registration of EEG and MRI data</b> (using BESA MRI)
	10:30-10:45	- Coffee break -
	10:45-12:15	<b>Distributed Source Analysis I</b> (Comparison of different volume techniques, e.g. LAURA, sLORETA), <b>Brain Atlases</b>
	12:15-13:15	- Lunch break -
	13:15-14:45	<b>Distributed Source Analysis II</b> (Bayesian imaging, cortical imaging, template head models)
	14:45-15:15	- Coffee break -
	15:15-16:00	<b>Source Montages</b> (creating source montages)
	16:00-17:00	<b>Time-Domain Beamformers</b> and <b>Virtual Sensor Montages</b>

## Day 3 Artifact Correction, EEG-fMRI, Brain Connectivity, and Statistics

<b>Advanced level</b>	09:00-09:45	<b>Artifact Correction</b> (understanding the background and different techniques including PCA and ICA)		
	09:45-10:30	<b>Simultaneous EEG-fMRI Data Processing</b> (fMRI gradient artifact, ballistocardiographic artifact, fMRI-informed source analysis)		
	10:15-10:45	- Coffee break -		
	10:45-12:15	<b>Time-Frequency Analysis</b> (wavelets, complex demodulation; using <b>BESA Connectivity</b> ), <b>Connectivity Estimators</b> (coherence, Granger causality, other methods, in sensor space and source space)		
	12:15-13:30	- Lunch break -		
	13:30-14:00	<b>Time-Frequency Beamforming, Dynamic Imaging of Coherent Sources (DICS)</b>	<b>Clinical Epilepsy Pipeline</b>	
	14:00-15:00	<b>Cross-subject Statistics</b> (using batch scripting and BESA Statistics)	<b>Find interictal spikes and analyse onset</b> (using BESA Epilepsy, BESA Research and BESA MRI)	
	15:00-15:30	- Coffee break -		
	15:30-16:30	<b>ANOVA, ANCOVA, and Correlation</b>	<b>Find seizures and mark onset</b> (automatic and manually using BESA Epilepsy)	
	16:30-17:00	<b>Q &amp; A</b>		