We recorded laser-evoked potentials to right hand stimulation in 15 healthy participants, using high-density EEG (128 electrodes) and modeled sources during the first second of brain activity in BESA. Initial dipolar source position was defined by converging data from SEEG and fMRI.

Grand-average data was well explained by a 7-dipole model. For 5 dipoles, source activity peaked ~200 ms after laser stimulation (right and left posterior insula-medial operculum, right frontal, left somatosensory-motor, anterior cingulate cortex). Left frontal dipole had a later, less defined peak, while the posterior cingulate dipole was maximally active ~400 ms.

Overall, even though the model was constrained regarding dipole *position*, activity *time-course* was coherent with current knowledge. Notably, the most posterior dipole, located in regions traditionally linked to self-perception, was active late in the interval.

Even though this model remains probably incomplete and might be furthered by the use of higher electrode densities, it demonstrates the potential of integrating multi-modal neuro-imaging data.

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ID 274 – Separating idea from the action: A standardized low-resolution brain electromagnetic tomography (sLORETA) study—
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Objective: We compared the temporal dynamics of sensory-motor network during the preparation of actual and imagined reaching and tried to separate ideational-to-motor from pure ideational part of motor program.

Methods: Ten volunteers reached or imagined reaching with right arm. EEG and reaction time were recorded. Event related potentials were analysed with sLORETA (http://www.uzh.ch/keyinst/loreta), comparing preparation of both tasks with respect to their baseline and between them.

Results: Reaction time for actual reaching was 360 ± 59 ms. There were three key differences between tasks with stronger activity during actual reaching. The first was from 160 ms to 220 ms after target presentation in frontal and parietal regions, the second from 220 ms to 320 ms, in premotor cortex and the third from 320 ms to the reaching onset, mainly in the peri-rolandic region.

These brain regions can be crucial for real reaching; processing arm-target integration and muscle activation. Anterior and posterior cingulate cortex were also involved most likely in awareness and controlling of the process.

Conclusions and key message: Our results suggest the existence of two systems: cortical/integrational and subcortical/controlling system. Observed differences in the first system may be important in separating the ideational from the motor part of the program.

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ID 290 – Differences in sleep microstate curves among healthy sleepers and patients after stroke—
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Objective: Sleep deprivation, whether from disorder or lifestyle, poses a significant risk in daytime performance. Ischemic stroke resulting in cerebral lesions is a well-known acute disorder that leaves affected patients strongly vulnerable to sleep disturbances that often lead to the above-mentioned impairments. The aim of this study is to identify objective sleep patterns being potential sources of disturbed sleep in stroke patients.

Methods: To overcome the well-known limits of the standardized sleep scoring into several discrete sleep stages we employed an EEG data-based probabilistic model of sleep with an arbitrary number of different sleep stages – sleep microstates – and a high time resolution. The probabilistic sleep model (PSM) characterizes sleep by posterior probabilities curves. On a wide collection of sleep recordings from healthy subjects and stroke patients we applied functional data clustering methods to sleep microstate curves of the PSM.

Results: We found differences between stroke patients and healthy subjects in sleep microstates associated with slow wave sleep. Considering weighted combinations of microstates a better separation of the two groups was obtained. We observed a connection between sleep structure and sleep quality questionnaires as well as a set of tests reflecting subjects' daytime cognitive performance.

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ID 326 – Functional connectivity alterations and their relation to pathophysiological changes in mild cognitive impairment—
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So far many studies have addressed the issue of connectivity changes in mild cognitive impairment (MCI) and Alzheimer's disease (AD) using different methods, including whole-brain network analyses describing structural and functional topology. In this study we address an association between network topology and brain pathology in MCI.

We investigated functional connectivity of MCI subjects ($n = 84$) and age-matched healthy controls (HC; $n = 32$) defined on AAL atlas. In the MCI group we assessed how changes in brain topology correlate with cognitive performance and CSF levels of AD biomarkers in order to shed further light on underlying pathophysiological mechanisms. We used following parameters to describe brain topology: clustering coefficient, path length, node strength, and eigenvector centrality.