

## Research Group "Intracranial EEG and Brain Imaging"

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Intracranial Electroencephalography (iEEG) is a uniquely suitable method to capture local, synchronized activity of the human cerebral cortex. The aim of our research group is to characterize local cortical activity in humans based on intracranial EEG. By following this aim, we contribute to a better description and ultimately also to a better understanding of the function of the human cerebral cortex. In addition to studies based on iEEG alone, our work also places a special emphasis on the comparison of iEEG and its integration with other neuroimaging methods, in particular with functional Magnetic Resonance Imaging (fMRI), including both meta-analyses and original fMRI studies. Furthermore, we are interested in the comparison of iEEG with conventional EEG non-invasively recorded from the scalp surface.

The functional systems that we are investigating are the cortical motor system, the auditory and language systems, and brain regions involved in cognitive (including emotional) processing, such as the amygdala, the insular cortex and the prefrontal cortex. Investigating these brain regions with iEEG and functional neuroimaging methods is motivated not only by basic research questions, but also by the prospect of contributing to the development of important clinical / biomedical application. Possible developments include new approaches to functional mapping of cortical functions for pre-neurosurgical evaluation of motor and language functions, and the characterization of control signals for brain-machine interfaces (BMIs) for paralyzed patients who suffered motor or cognitive damage.

For further information, please refer to the following [sites](#)

### Medizinische Doktorarbeit zu vergeben

Neue Therapieansätze für Gelähmte Patienten durch Neurotechnologie – Untersuchungen mittels funktioneller Bildgebung

Wir bieten:

- Spannende Promotionsthemen
- gute Betreuung
- ein inter-disziplinäres Team
- ... in einem wissenschaftlichen Umfeld

Wir suchen:

- Engagierte Doktoranden/innen
- mit Freude an der Arbeit mit Patienten
- und/oder an experimenteller Arbeit und anspruchsvoller Datenauswertung

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