

Arbeitsgruppe: Applied Neurocognitive Psychology
Ansprechpartner: Jochem Rieger

Forschungsschwerpunkte und Interessen:

- Neural processing of complex natural stimuli (auditory and visual)
- Neural control of complex natural movements (reach and grasp)
- Brain Computer Interfacing for the monitoring of cognitive states and for robot control

Modellorganismen (wenn vorhanden):

The workgroup investigates neural function in humans.

Methoden:

- Expertise in a wide spectrum of neurophysiological Methods: MEG/EEG, fMRI, fNIRS, ECoG, and deep brain recordings.
- Data driven information mining approaches from statistical learning, linear systems analysis
- Online and single trial analysis.

Ausgewählte Publikationen der letzten fünf Jahre:

1. Reichert, C., Fendrich, R., Bernarding, J., Tempelmann, C., Hinrichs, H. and Rieger, J. W. (2014) Online tracking of the contents of conscious perception using real-time fMRI. *Frontiers in Neuroscience* 8:116, doi: 10.3389/fnins.2014.00116
2. Christoph Reichert, Matthias Kennel, Rudolf Kruse, Hans-Jochen Heinze, Ulrich Schmucker, Hermann Hinrichs, and Jochem W. Rieger (2015) Brain-Controlled Selection of Objects Combined with Autonomous Robotic Grasping. In *Neurotechnology, Electronics, and Informatics* Eds. Ana Rita Londral, Pedro Encarnação, José Luis Pons Rovira, Springer Series in Computational Neuroscience. DOI 10.1007/978-3-319-15997-3
3. Martin, S., Brunner, P., Holdgraf, C., Heinze, H.-J., Crone, N. E., Rieger, J.W., Schalk, G., Knight, R. T. and Pasley, B. (2014) Decoding spectrotemporal features of overt and covert speech from the human cortex. *Frontiers in Neuroengineering* 7:14, doi: 10.3389/fneng.2014.00014
4. Quandt F., Reichert C., Hinrichs H., Heinze H.-J., Knight R.T., Rieger J.W. (2012) Precise temporal and spatial information allow for non-invasive single trial discrimination of finger movements of the same hand: A combined MEG and EEG study. *NeuroImage* 59: 3316-3324
5. Chang E.F., Rieger J.W., Johnson K., Berger M.S., Barbaro N.M., Knight R.T. (2010) Categorical representation of phonemes in the human superior temporal gyrus. *Nature Neuroscience* 13: 1428–1432

(Angestrebte) Kooperationen/Projekte:

In the fields of systems/computational neuroscience, movement disorders, speech understanding production, movement control. We are also interested in specific motor and perceptual dysfunctions and dysfunctions of executive control.