

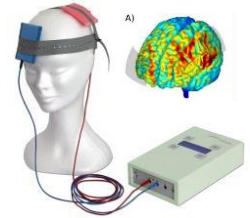


# Transcranial Brain Stimulation: From Basics to Advanced Applications

June 25.-27. 2019 (3-day workshop)

**Dr. Til Ole Bergmann**

*Deutsches Resilienz Zentrum (DRZ) Mainz, AG Neurostimulation*



Non-invasive brain stimulation techniques such as transcranial magnetic stimulation (TMS) and transcranial current stimulation (TDCS/TACS) are important tools in cognitive neuroscience and human neurophysiology. The ability to experimentally manipulate local neural activity allows the investigation of causal structure-function relationships that complement the correlative approach of neuroimaging and electrophysiology. "Online" approaches, assessing the immediate neural response to stimulation, can be used to (i) quantify neuronal network properties such as excitation, inhibition, or connectivity, (ii) interfere with ongoing spontaneous or task-related activity and thereby affect behavioral performance, or (iii) modulate the level and timing of neuronal activity. In contrast, "offline" approaches can be utilized to either (iv) inhibit or (v) facilitate local neuronal excitability via synaptic plasticity, assessing its subsequent effects on neural activity and behavior. This workshop consists of lectures and discussions covering the theoretical background on stimulation techniques, physiological mechanisms, experimental paradigms, and combination with neuroimaging/electrophysiology, as well as hands-on sessions (depending on the number of participants).

## Tentative Programme

### **Day 1 - TMS**

TMS Physics & Fundamentals  
TMS Approaches, Protocols, Paradigms  
How to Determine TMS Site and Intensity  
Neurophysiological Mechanisms of TMS  
TMS Safety & Hands-on

### **Day 2 – TCS**

TCS Physics & Fundamentals  
TCS Approaches, Protocols, Paradigms  
Neurophysiological Mechanisms of TCS  
TCS Safety & Hands-on

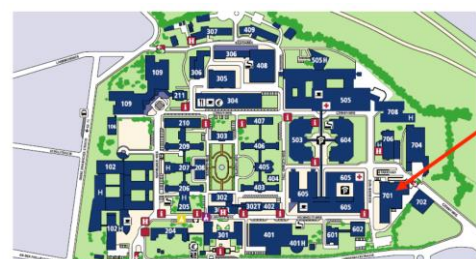
### **Day 3 – Advanced**

Clinical Neurophysiology & Treatment  
Neuroenhancement & Ethical Considerations  
Combining Brain Stimulation with Neuroimaging  
TMS-EEG Recording & Analysis  
Brain state-dependent brain stimulation

## Information

**Time:** June 25.-27. 2019, 10:00 – 17:00 h

**Location:** NIC Seminar room R39, Langenbeckstr. 1, Geb. 701, EG, 55131 Mainz



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**Credits:** 3 CP

**Fee:** none