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# Modeling approach to brain dynamics and stimulation of large-scale brain networks

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## 15th February 2018

## at 15:00

**room 211, building A35, University Campus Bohunice**

Kamenice 5, Brno

### ABSTRACT

Brain stimulation techniques such as transcranial stimulation are potential adjunct therapy in many psychological and neurological disorders. When the brain is stimulated, also by self-paced or cue-based tasks, the brain initially responds with activities in specific areas. The subsequent pattern formation of functional networks is constrained by the structural connectivity. The extent to which stimulus-induced brain activity spreads and information is processed over short- or long-range connections is unclear. This talk discusses the effects of structural connectivities on the network response to stimulation in whole-brain models of humans and mice. The results suggest that the stimulus-induced brain activity, which may indicate information and cognitive processing, follows specific routes imposed by the network structure explaining the emergence of functional networks. The results also show how transcranial stimulation can alter the network and its functional connectivity.