Brain States: Characterization and Neuromodulation by DBS

Interdisciplinary contributions to the study of brain mechanics have greatly advanced our theories of the neurodynamic operations employed by the brain. Although the brain exhibits continuous ongoing activity, variation in the spatiotemporal patterns of activation observed across different brain regions during rest versus active processing provides valuable information about functional connectivity and strategies for information processing.

This symposium will explore the most up-to-date theories of normal brain function and how these processes may be altered to produce pathological states. Furthermore, it will explore the models and methods used to describe the proposed neural strategies subserving these different brain states.

These developments can be used to transform clinical practice by employing neuroscientific diagnoses to advance more effective therapeutic interventions. In turn, scientists can use patient treatment-response assessments and clinical studies to refine their theories and develop better experimental and computational models to test them.

The theory of oscillations and their aberration in neuropsychiatric disorders is one example of the benefits of this exchange. Neurosurgeons can use oscillatory biomarkers during deep brain stimulation to improve outcomes, while scientists can benefit from electrophysiological recordings from the human brain to better understand spatial and temporal changes and causality in network dynamics.

During this symposium, pathological mechanisms of disorders such as Parkinson's disease, epilepsy, Tourette syndrome, and OCD will be discussed together with the state-of-the-art recording and analysis techniques which help to elucidate them. Emphasis will be placed on next-generation approaches which allow the collaboration of medicine and science to advance the field from principles of organization to the causal control of function.

Day 1

09:30 – 10:00	Welcome Reception
10:00 – 12:00	*Characterization and Prediction of Epileptic Seizures*
10:00 – 10:50	Fernando Lopes da Silva
10:50 – 11:40	Marc Goodfellow
11:40 – 12:30	Viktor Jirsa

12:30 – 14:00	Lunch
14:00 – 14:40	Industry Symposium
14:40 - 17:10	*Temporal Dynamics and Non-Stationarity of Large – Scale Brain Networks*
14:40 - 15:30	Christoph Michel
15:30 - 16:20	Dimitri van de Ville
16:20 - 17:30	Coffee Break & Poster Session
17:30 – 18:30	Special Lecture: Wolf Singer
19:00	Speaker Dinner

Day 2

08:20 – 10:20	*Characterization of Network Oscillations in Neurodevelopmental Disorders*
08:20 – 09:10	Urs Ribary
09:10 - 10:20	John Foxe
10:20 – 10:30	Coffee Break
10:30 - 13:00	*Dynamic Communication in Neuronal Circuits*
10:30 - 11:20	Emad Eskandar
11:20 – 12:10	Hagai Bergman
12:10 - 13:00	Peter Brown
13:00 – 14:30	Lunch & Poster Session
14:30 – 15:10	Industry Symposium
15:10 – 17:40	*Advanced Methodologies*
15:10 – 16:00	Alain Destexhe
16:00 – 16:50	Jens Haueisen
16:50 – 17:40	Cameron McIntyre

Day 3 *Neuromodulation of Brain States in Psychiatric Disorders*

08:30 – 09:40	Bart Nuttin
09:40 – 10:30	Stephan Charbades
10:30 – 10:40	Coffee Break
10:40 – 11:30	Günter Schiepek
11:30 – 12:20	Rowshanak Hashemiyoon
12:20 - 13:10	Lunch
13:10 – 13:50	Industry Symposium
13:50 – 14:40	TBA
14:40 – 15:30	Anthony Grace
15:30 – 16:20	Jürgen Voges
16:20 – 16:40	Coffee Break
16:40 – 17:30	Andres Lozano
17:30 – 18:20	Jens Kuhn
18:20 – 19:10	Veerle Visser-Vandewalle
19:10 – 20:00	Closing Remarks & Farewell Reception