IWSP5

5TH International Workshop on Seizure Prediction

Dresden, September 19–23, 2011

Scientific Program

September 7, 2011

Sunday, September 18, 2011

16:00–20:00	Conference Registration Desk open
18:00– ...	**Welcome and Get-Together** **Location: Foyer of the Görges-Bau**

Monday, September 19, 2011

07:30–17:00	Conference Registration Desk open
07:50–08:00	Introductory Remarks and Orientation
08:00–09:30	**Didactic Session I** Chairs: *John Jefferys* (UK) and *Levin Kuhlmann* (Australia)
08:00–08:30	**Animal models** *Rüdiger Köhling* (University of Rostock, Germany)
08:30–09:00	**Computational models in epilepsy** *Fabrice Wendling* (INSERM, Université de Rennes 1, France)
09:00–09:30	**Perturbing the neuronal dynamics: Can we ask the system to tell us what we need to know?** *Stiliyan Kalitzin* (SEIN, Heemstede, The Netherlands)
09:30–10:00	Coffee Break
10:00–12:30	**Session 1: What can Animal Models Contribute to Improve Understanding of the Transition to Seizures?** Chairs: *Erika Fanselow* (USA) and *John Jefferys* (UK)
	Neuronal network dynamics before and during the transition to seizure *Premysl Jiruska* (University of Birmingham, UK)
	Probing sleep-seizure correlations in experimental models of epilepsy *Bruce Gluckman* (Pennsylvania State University, University Park, USA)
	Trigeminal nerve stimulation for epilepsy treatment: Progress and mechanisms *Erika Fanselow* (University of Pittsburgh, USA)
	Interictal, preictal and seizure onset patterns *Marco de Curtis* (Fondazione Istituto Neurologico, Milano, Italy)
	Data Blitz, General Discussion
12:30–14:00	Lunch
14:00–16:30	**Session 2:** **What do Computational Models tell us about Seizures, their Prediction and Control?** Chairs: *Stiliyan Kalitzin* (The Netherlands), *Hitten Zaveri* (USA), and *Piotr Franaszczuk* (USA)
	Generation of fast ripple oscillations in multilayer neuronal networks *Piotr Suffczynski* (University of Warsaw, Poland)
	Controlled dynamics of autonomous seizure generation and termination in lumped realistic neuronal models *Marc Koppert* (SEIN, Heemstede, The Netherlands)
	Predictability of seizure-like events in a complex neural network model *Alexander Rothkegel* (University of Bonn, Germany)
	The dynamic evolution of seizures: Can mathematical modelling enhance clinical understanding? *John Terry* (University of Sheffield, UK)
	(Hyper)excitability of neuronal systems: What can we learn from macroscopic and detailed models of epileptogenic networks? *Fabrice Wendling* (INSERM, Université de Rennes 1, France)
	Data Blitz, General Discussion
16:30–17:00	Coffee Break
17:00–19:30	**Session 3: Active Probing of the Pre-Seizure State** Chairs: *Stiliyan Kalitzin* (The Netherlands) and *Ivan Osorio* (USA)
	Active probing of the pre-seizure state *Fernando Lopes da Silva* (University of Amsterdam, The Netherlands)
	Transcranial magnetic stimulation identifies pre-seizure increase of cortical excitability *Mark Richardson* (King's College London, UK)
	Different types of varying responses of epileptogenic networks to repeated electrical stimulations *Olivier David* (INSERM, Grenoble, France)
	Cortical excitability increases up to 24 hours before a seizure *Radwa Badawy* (The University of Melbourne, Australia)
	General Discussion

Tuesday, September 20, 2011

07:30–17:00	Conference Registration Desk open
08:00–09:30	**Didactic Session II** Chairs: *Florian Mormann* (Germany) and *Jean Gotman* (Canada)
08:00–08:30	**EEG patterns between seizures** *Andreas Schulze-Bonhage* (University of Freiburg, Germany)
08:30–09:00	**Measuring small-scale events in broad-band EEG signals** *Greg Worrell* (Mayo Clinic, Rochester, USA)
09:00–09:30	**Signal processing of the EEG: Approaches tailored to epilepsy** *Björn Schelter* (University of Freiburg, Germany)
09:30–10:00	Coffee Break
10:00–12:30	**Session 4: Recent Developments in Signal Processing of Interest for Seizure Prediction** Chairs: *Levin Kuhlmann* (Australia) and Björn Schelter (Gemany)
	Using bivariate surrogates to lateralize the epileptic focus *Ralph Andrzejak* (University Pompeu Fabra, Barcelona, Spain)
	Spatio-temporal dynamics of seizures characterized with genuine cross-correlations *Markus Müller* (Universidad Autónoma del Estado de Morelos, Mexico)
	Probing cortical excitability using cross-frequency coupling between low and high-frequency oscillations in intracranial EEG recordings *Michel Le Van Quyen* (CRICM, Paris, France)
	Model-based approaches to estimate population activity from the EEG *Levin Kuhlmann* (University of Melbourne, Australia)
	Computational modeling of the EEG as an evaluation tool for seizure prediction methods *Delphine Cosandier-Rimélé* (University of Freiburg, Germany)
	Data Blitz, General Discussion
12:30–14:00	Lunch
14:00–16:30	**Session 5: What can Microelectrode Recordings in Humans tell us about Ictogenesis?** Chairs: *Florian Mormann (Germany)* and *Ralph Andrzejak* (Spain)
	HFOs in the preictal period *Julia Jacobs* (University of Freiburg, Germany)
	Circuit breakers and the seizure onset zone *Catherine Schevon* (Columbia University, New York, USA)
	Microseizures in ictogenesis and seizure prediction *Matt Stead* (Mayo Clinic, Rochester, USA)
	Single-neuron dynamics during seizures in humans *Wilson Truccolo* (Brown University, Providence, USA)
	Data Blitz, General Discussion
16:30–17:00	Coffee Break
17:00–19:30	**Session 6: International Databases and Recent Technological Developments** Chairs: *Andreas Schulze-Bonhage* (Germany) and *Brian Litt* (USA)
	The European Database *Andreas Schulze-Bonhage* (University of Freiburg, Germany)
	Structure and demonstration of the European Database *Matthias Ihle* (University of Freiburg, Germany)
	The International Epilepsy Electrophysiology Database (US Component) *Brian Litt* and *Zack Ives* (University of Pennsylvania, Philadelphia, USA)
	Initial experiences with a fully implantable iEEG recording system *Kent Leyde* (NeuroVista Corporation, Seattle, USA)
	General Discussion

Wednesday, September 21, 2011

07:30–12:30 Conference Registration Desk open

08:00–09:30 **Didactic Session III**
Chairs: *Ronald Tetzlaff* (Germany) and *Klaus Lehnertz* (Germany)

08:00–08:30 **High frequency oscillations**
Jean Gotman (Montreal Neurological Institute, Canada)

08:30–09:30 **Data-based predictions and performance measures for these**
Holger Kantz (MPIPKS, Dresden, Germany)

09:30–10:00 Coffee Break

10:00–12:30 **Session 7: Non-EEG Based Approaches to the Transition to Seizures**
Chairs: *Hitten Zaveri* (USA) and *Jean Gotman* (Canada)

Pre-ictal vascular reactivity
Theodore Schwartz (Weill Cornell Medical College, New York, USA)

The brain chemistry of spontaneous seizures in patients with epilepsy
Tore Eid (Yale University School of Medicine, New Haven, USA)

Microelectrode arrays for second-by-second measurements of L-glutamate and other neurochemicals in the CNS
Greg Gerhardt (University of Kentucky Medical Center, Lexington, USA)

Movement detection as a precursor for the transition to motor seizures
Johan Arends (Epilepsy Centre Kempenhaeghe, Technical University Eindhoven, The Netherlands)

General Discussion

12:30–14:00 Lunch

Excursion

Hiking Tour in Dresden-Pillnitz

Steamboat Tour on the River Elbe

Conference Dinner

Thursday, September 22, 2011

07:30–17:00	Conference Registration Desk open
08:00–09:30	**Didactic Session IV** Chairs: *Klaus Lehnertz* (Germany) and *Ronald Tetzlaff* (Germany)
08:00–08:30	**Complex networks** *Stephan Bialonski* (University of Bonn, Germany)
08:30–09:00	**Assessment of therapeutic efficacy: The importance of circadian multi-variate analysis** *Ivan Osorio* (University of Kansas Medical Center, Kansas City, USA)
09:00–09:30	**Introduction to Cellular Nonlinear Networks: Theory and applications** *Ronald Tetzlaff* (Technische Universität Dresden, Germany)
09:30–10:00	Coffee Break
10:00–12:30	**Session 8: Ictogenesis in Complex Epileptic Brain Networks** Chairs: *Björn Schelter* (Gemany) and *Levin Kuhlmann* (Australia)
	Peri-ictal network phenomena in intracranial EEG: Seizure onset and termination *Christian Rummel* (Inselspital, Bern, Switzerland)
	Network analysis of generalized epileptic discharges *Pauly Ossenblok* (Kempenhaeghe, Heeze, The Netherlands)
	On the centrality of the focus in epileptic networks *Marie-Therese Kuhnert* (University of Bonn, Germany) (not invited, but selected from the poster abstracts)
	From pathological reorganization of epileptic-network during adult neurogenesis to enhanced seizure *Michal Zochowski* (University of Michigan, Ann Arbor, USA)
	Complex dynamics in a critical regime—spontaneous, autonomous transition to and from seizure in a complex spiking model *Peter Stratton* (The University of Queensland, Brisbane, Australia)
	Data Blitz, General Discussion
12:30–14:00	Lunch
14:00–16:30	**Session 9: Recent Approaches to Seizure Control** Chairs: *Ivan Osorio* (USA) and *Paul Boon* (Belgium)
	Invasive brain stimulation protocols in the treatment of epilepsy *Kristl Vonck* (Ghent University Hospital, Belgium)
	Non-invasive protocols for stimulation of the human brain *Walter Paulus* (University of Göttingen, Germany)
	Utilizing cellular dynamics to improve seizure control *Theoden Netoff* (University of Minnesota, Minneapolis, USA)
	Implantable devices for optogenetic neuromodulation in a mouse animal model *Pedro Irazoqui* (Purdue University, West Lafayette, USA)
	General Discussion
16:30–17:00	Coffee Break
17:00–19:00	**Session 10: Cellular Nonlinear Networks: Recent Developments and Trends** Chairs: *Ronald Tetzlaff* (Germany) and *Tamás Roska* (Hungary)
	Detection of dynamic events via kilo-processor chips and cellular wave algorithms *Tamás Roska* (Hungarian Academy of Sciences and Pazmany University, Budapest, Hungary)
	Low-power mixed-signal circuits and architectures for detection and pre-processing of 2-D sensory signals *Angel Rodríguez-Vázquez* (Universidad de Sevilla, Spain)
	EEG signal processing by Cellular Nonlinear Networks *Jan Müller* (Technische Universität Dresden, Germany)
	Data Blitz, General Discussion
19:30– ...	**Guided Poster Session and Competition for Best Posters (with Beer and Snacks)**

Friday, September 23, 2011

08:00–12:30	Conference Registration Desk open
08:30–09:00	**Didactic Session V** Chairs: Chairs: *Catherine Schevon* (USA) and *Bruce Gluckman* (USA)
08:30–09:00	**Biological rhythms and seizure susceptibility: Relevance to seizure prediction** *Catherine Schevon* (Columbia University Medical Center, New York, USA) and *Bruce Gluckman* (Pennsylvania State University, University Park, USA)
09:00–11:00	**Session 11: Impact of Sleep and Long-Biological Cycles on Seizure Prediction** Chairs: *Catherine Schevon* (USA) and *Bruce Gluckman* (USA)
	EEG cyclicity in epileptic female rats *Helen Scharfman* (New York University Langone Medical Center, USA)
	Relationship between seizures and circadian rhythm in temporal lobe epilepsy *Paul Carney* (University of Florida, Gainesville, USA)
	Using mathematical models of the sleep-wake regulatory system to understand the effect of sleep states on seizure initiation *Madineh Sedigh-Sarvestani* (Pennsylvania State University, University Park, USA)
	Long-term variability of global statistical properties of epileptic brain networks *Marie-Therese Kuhnert* (University of Bonn, Germany)
	General Discussion
11:00–11:30	Coffee Break
11:30–12:30	**General Discussion, Consensus, and Concluding Remarks** **Bruce Gluckman's Invitation to the 6th International Workshop on Seizure Prediction**
12:30–14:00	Lunch
	Adjourn