IWSP7 Program

Including the overlapping Melbourne Epilepsy (ME@MBC’15) meeting.

Monday August 3 2015 – IWSP7 Educational Day

08:00-08:30 – Registration – Foyer

08:30-10:00 – Session 1a – Introduction to Epilepsy – Ian Potter Auditorium
Educational Day Welcome
  Levin Kuhlmann, University of Melbourne
Basic Epilepsy
  Andreas Schulze-Bonhage, University of Freiburg
Brain Activity and Seizure Statistics in Epilepsy
  Mark Cook & Philippa Karoly, University of Melbourne

08:30-10:00 – Session 1b – The Virtual Brain Tutorial Part 1 – Education Room
  Timothée Proix, Aix Marseille Université; Paula Sanz-Leon, University of Sydney

10:00-10:30 – Morning Tea Provided – Foyer

10:30-12:00 – Session 2a – EEG analysis, Networks and Machine Learning – Ian Potter Auditorium
The Network Theory of Epilepsy: Concepts, Questions and Analysis
  Klaus Lehnertz, University of Bonn; Hitten Zaveri, Yale University
Machine Learning and EEG analysis
  Theoden Netoff, University of Minnesota

10:30-12:00 – Session 2b – The Virtual Brain Tutorial Part 2 – Education Room
  Timothée Proix, Aix Marseille Université; Paula Sanz-Leon, University of Sydney

12:00-13:00 – Lunch Provided – Foyer

13:00-15:00 – Session 3a – Oscillations, Seizure Prediction, and Devices for Epilepsy – Ian Potter Auditorium
Normal and Pathological High Frequency Oscillations
  Liset Menendez de la Prida, Instituto Cajal – CSIC
Introduction to Seizure Prediction
  Catalina Alvarado-Rojas, Pontificia Universidad Javeriana
Current & Next Generation Devices for Epilepsy
  Greg Worrell, Mayo Clinic

13:00-15:00 – Session 3b – IEEG Database Tutorial Part 1 – Education Room
  Brian Litt, Hoameng Ung, Lohith Kini, Ankit Khambhati, University of Pennsylvania

15:00-15:30 – Afternoon Tea Provided – Foyer
15:30-17:30 – Session 4a – Modelling and Engineering for Epilepsy – Ian Potter Auditorium
   Keys and Challenges of modeling epileptiform behaviour 15:30
   William Stacey, University of Michigan
   A physicist’s take on epilepsy – neural field models of seizure transition 16:10
   Andre Peterson, University of Melbourne
   Why Would a Seizure Prediction Investigator Need To Care About 16:50
   Group Theory?
   Steven Schiff, Pennsylvania State University

15:30-17:30 – Session 4b – IEEG Database Tutorial Part 2 – Education Room
   Brian Litt, Hoameng Ung, Lohith Kini, Ankit Khambhati, University of Pennsylvania

17:30-18:30 – Mentoring Session – Ian Potter Auditorium

18:30-19:00 – Opening Networking Reception – Level 5 Common Room
19:00-21:00 – IWSP7 Poster Session – Level 5 Common Room

Tuesday August 4 2015 – IWSP7 day 1

08:00-09:00 – Registration – Foyer

All talks will be in the Ian Potter Auditorium

09:00-10:00 – Introduction: Goals and hot topics
   Session Moderator: Mark Cook, University of Melbourne
   Introductory Remarks/Welcome 09:00
   Iven Mareels, Dean of Engineering, University of Melbourne
   Goals and hot topics in epilepsy mechanisms, models, prediction and control
   Mark Richardson, Kings College London 09:10
   Panel positions:
   Bjoern Schelter, University of Aberdeen 09:30
   Bruce Gluckman, Pennsylvania State University 09:35
   Liset Menendez de la Prida, Instituto Cajal – CSIC 09:40

10:00-10:30 – Morning Tea Provided – Foyer

10:30-12:30 – Advances in Seizure Prediction and Detection Part 1
   Session Moderators: David Grayden, University of Melbourne; William Stacey, University of Michigan
   Forecasting seizures in dogs with naturally occurring epilepsy 10:30
   Gregory Worrell, Mayo Clinic
   Introduced by Chris Meisel, National Institutes of Health
   Cross-frequency coupling and seizure prediction 11:00
Catalina Alvarado-Rojas, Pontificia Universidad Javeriana
Introduced by Joana Soldado Magraner, University College London
Seizure prediction and the EPILEPSIAE project 11:30

Antonio Dourado, University of Coimbra
Introduced by Kais Gadhoumi, McGill University
Mathematical characterization of epileptiform limbic events 12:00

Wytse Wadman, University of Amsterdam

12:30-13:30 – Lunch Provided – Foyer

13:30-15:00 – Computational Modelling of Epilepsy
Session Moderators: Anthony Burkitt & Andre Peterson, University of Melbourne

The role of macroscopic brain networks in seizure initiation 13:30
John Terry, University of Exeter
Introduced by Amirhossein Jafarian, University of Melbourne

Modelling of neuronal and ionic dynamics during ictogenesis 14:00
Piotr Suffczynski, University of Warsaw
Introduced by Sebastien Naze, Institut de Neuroscience des Systèmes

Seizure spread in a virtual epileptic patient 14:30
Timothée Proix, Aix Marseille Université; Paula Sanz-Leon, University of Sydney

15:00-15:30 – Afternoon Tea Provided – Foyer

15:30-17:00 – Epilepsy Mechanisms and Neural Oscillations
Session Moderators: Liset Menendez de la Prida, Instituto Cajal – CSIC; Theoden Netoff, University of Minnesota

Neurons, neuronal populations and networks during seizure initiation, propagation and termination 15:30
Sydney Cash, Massachusetts General Hospital, Harvard Medical School
Introduced by Hoameng Ung, University of Pennsylvania

Experimental control of ictogenesis to identify proictal biomarkers 16:00
William Stacey, University of Michigan

Post-malarial epilepsy - dynamics in an animal model 16:30
Bruce Gluckman, Pennsylvania State University

17:00-18:00 – Split-groups: problems & solutions
Co-ordinated by Organizing Committee

18:30-21:30 – Conference Dinner for all registrants – Level 10, Woodward Conference Centre, Law Building, 185 Pelham St, Carlton VIC 3053 (See map at back of program)
Wednesday August 5 2015 – IWSP7 day 2

All talks will be in the Ian Potter Auditorium

08:30-09:30 – Databases and Contest developments
Session Moderators: Alan Lai & Tatiana Kameneva, University of Melbourne
Seizure prediction algorithm development and validation via kaggle.com 08:30
Benjamin Brinkmann, Mayo Clinic
Kaggle competition seizure prediction algorithm 08:50
Simone Bosshard, University of Queensland
Data Integration, Neuroengineering and Collaboration on the Cloud 09:10
Brian Litt, University of Pennsylvania

09:30-10:00 – Morning Tea Provided – Foyer

10:00-12:00 – Imaging, Networks and Epilepsy
Session Moderators: Klaus Lehnertz, University of Bonn; Hitten Zaveri, Yale University
Spatio-temporal dynamic EEG source imaging of epileptogenic activity 10:00
Bin He, University of Minnesota
Introduced by Ankit Khambhati, University of Pennsylvania
Multimodal imaging and modeling of epileptic seizures and interictal epileptiform activity in humans 10:30
Louis Lemieux, University College London
Introduced by Stephan Lau, University of Melbourne
 Revealing a brain network endophenotype in families with idiopathic generalized epilepsy 11:00
Wessel Woldman, University of Exeter
Regional and network relationship in the intracranial EEG and its second spectrum 11:30
Rasesh Joshi, Yale University

12:00-13:00 – Lunch Provided – Foyer

13:00-14:30 – Advances in Seizure Prediction and Detection Part 2
Session Moderator: Gregory Worrell, Mayo Clinic; John Terry, University of Exeter
An extracerebral biosignal pattern for epileptic seizure detection 13:00
Diana Cogan, University of Texas at Dallas
Cortical excitability measurement and seizure prediction utilizing electrical probing 13:30
Farhad Goodarzy, University of Melbourne
Adaptation of the phase clustering index to the rat model of epilepsy 14:00
Karin Somerlik-Fuchs, University of Freiburg

14:30-15:00 – Afternoon Tea Provided – Foyer
15:00-16:30 – Model-Based Estimation and Control in Epilepsy

Session Moderators: Steven Schiff, Pennsylvania State University; Dean Freestone, University of Melbourne

Recent advances in data-based modelling and their role in epilepsy research 15:00
Bjoern Schelter, University of Aberdeen
Introduced by Helmut Schmidt, University of Exeter
Can the mathematics of networked oscillators explain the challenges in predicting epileptic seizures? 15:30
Elma O’Sullivan-Greene, University of Melbourne
Real-time automated EEG tracking of brain state parameters using neural field theory: Application to brain stability and seizures 16:00
Romesh Abeysuriya, University of Sydney

16:30-17:30 – Outcomes and Targets for the Seizure Prediction Community

Moderators: IWSP7 Organising Committee
Participants:
Theoden Netoff, University of Minnesota
Andreas Schulze-Bonhage, University of Freiburg
William Stacey, University of Michigan

Thursday August 6 2015 – IWSP7/ME@MBC’15 joint day

All talks will be in the Ian Potter Auditorium

07:15-08:40 – BioBreakfast on Innovation in Epilepsy at the Interface of Industry and Research
(Not included in IWSP7 registration fee. To register see details on the www.iwsp7.org website)

08:45-10:30 – Epilepsy: From DNA to multi-faceted disease

Session Moderator: Mark Cook, University of Melbourne

Welcome 08:45
Mark Cook, University of Melbourne
Genetics and the individual-specific nature of epilepsy 09:00
Samuel Berkovic, University of Melbourne
 Introduced by Michael Chang, Toronto Western Research Institute
Unification of spikes, seizures and spreading depression 09:30
Steven Schiff, Penn State University
 Introduced by Ann Vanleer, United States Naval Academy
Sources of functional heterogeneity in the cellular activity of hippocampal microcircuits in temporal lobe epilepsy 10:00
Liset Menendez de la Prida, Instituto Cajal – CSIC
 Introduced by Jennifer Robertson, Australian National University

10:30-11:00 – Morning Tea Provided – Foyer
11:00-12:30 – Sudden Unexpected Death in Epilepsy (SUDEP)
Session Moderator: Anne McIntosh, Austin Health
Plenary: SUDEP: An Overview
Philippe Ryvlin, Lyon University
Introduced by Vanessa Senger, Technical University of Dresden
Genetics of SUDEP
Doug Crompton, Northern Health
Sudden unexpected death, epilepsy and familial cardiac pathology
Alana Eastaugh, Austin Health
Chronic epilepsy causing an acquired cardiac channelopathy – more than just HCN
Sakshi Singh, Royal Melbourne Hospital

12:30-13:30 – Lunch Provided – Foyer

13:30-15:30 – Brain Stimulation and Monitoring
Session Moderator: Brian Litt, University of Pennsylvania
Responsive direct brain stimulation for the treatment of epilepsy
Martha Morrell, Stanford University, Neuropace
Introduced by Roman Sandler, University of Southern California
Anterior thalamic stimulation
John Archer, Austin Health
Tracking seizure dynamics using data-driven neural-field modelling
Dean Freestone, University of Melbourne
Implantable devices
Mark Cook, University of Melbourne
Fit-bit epileptology
Patrick Kwan, Royal Melbourne Hospital
Discussion/Extra time

15:30-16:00 – Afternoon Tea Provided – Foyer

16:00-17:30 – Imaging
Session Moderator: Sarah Wilson, University of Melbourne
Dynamic changes in the peri-ictal period
Jennifer Walz, Florey Institute of Neuroscience & Mental Health
Functional networks in focal epilepsy
Mangor Pedersen, Florey Institute of Neuroscience & Mental Health
Autobiographical memory breakdown: using event-related ICA to study higher cognitive functions
Chris Tailby, Epilepsy Research Centre
Networks in Lennox-Gastaut syndrome
Aaron Warren, Florey Institute of Neuroscience & Mental Health
White matter tract abnormalities in Periventricular Nodular Heterotopia
Shawna Farquharson, Florey Institute of Neuroscience & Mental Health
Simultaneous EEG-MEG in refractory focal epilepsy

Chris Plummer, St. Vincent’s Hospital Melbourne

17:30-20:00 – ME@MBC Networking Reception and Poster Session – Foyer (Open to IWSP7 registrants; does not involve IWSP7 posters)

Friday August 7 2015 – ME@MBC’15 day 2 (Open to IWSP7 registrants)

All talks will be in the Ian Potter Auditorium

08:45-10:15 – Data Blitz: Students and Post-docs present
Session Moderator: Graeme Jackson, Florey Institute of Neuroscience & Mental Health

10:15-11:00 – Morning Tea Provided – Foyer

11:00-12:30 – Basic Science
Session Moderator: Levin Kuhlmann, University of Melbourne

Epileptogenesis in the developing brain
Bridget Semple, Royal Melbourne Hospital
11:00

Can a spider toxin fix Dravet syndrome?
Kay Richards, Florey Institute of Neuroscience & Mental Health
11:15

Human iPS cells as a model of genetic epilepsy
Snezana Maljevic, University of Melbourne
11:30

In vivo myelo-architecture using whole-brain diffusion MRI
Fernando Calamante, Austin Health
11:45

Using diamonds to measure neuronal activity
David Simpson, University of Melbourne
12:00

Closing Remarks: Levin Kuhlmann
12:15