

ICTALS 2025

International Conference
for Technology and
Analysis of Seizures

Hosted by the 46th
International Symposium
of the Department of
Neuroscience of the
Université de Montréal



Pierre-Péladeau Amphitheatre of CHUM

1050 Saint-Denis Street, Montreal, QC Canada, H2X 3J4

Monday, June 2, 2025

DIDACTICS

SESSION 1	Current practice of epilepsy: How to diagnose, monitor, and treat epilepsy?
12h45 – 14h00	Chairs: Dang Nguyen (Université de Montréal) & Raluca Pana (McGill University) Mark Keezer (Université de Montréal) - Clinical diagnosis Elsa Rossignol (Université de Montréal) - Medical treatment Raluca Pana (McGill University) - Investigation of refractory cases Sami Obaid (Université de Montréal) - Surgical treatment
14h00 – 14h20	Break
SESSION 2A	How to detect, quantify, and interpret cycles in epilepsy?
14h20 – 15h35	Chairs: Ralph Andrzejak (Pompeu Fabra University) & Valérie Mongrain (Université de Montréal) Ralph Andrzejak (Pompeu Fabra University) - Strength of cycles: What to expect by chance ? Rachel E. Stirling (University of Melbourne) - Quantifying and interpreting cycles in continuous data Cecilia Friedrichs-Maeder (University Hospital Bern) - Evaluating cycles: Real-world challenges in the clinical setting
SESSION 2B	How to localize EEG/MEG sources with their spatial extent in epilepsy?
14h20 – 15h35 Room A03.9209	Chair: Christophe Grova (Concordia University) John Mosher (University of Texas) - Source reconstruction from electrophysiological data Maëva Laquitaine (McGill University) - Hands on using Brainstorm plugin for MEM localization Jean-Marc Lina (École de technologie supérieure) - New MEM perspectives in neuroimaging: Graphs, Wavelets and Compressed Sensing Katharina Duecker (Brown University) - Human Neocortical Neurosolver: a user-friendly tool for biophysically detailed modeling of human EEG/MEG signals
15h35 – 16h00	Break
SESSION 3	How to use machine learning within the context of epilepsy?
16h00 – 17h15	Chairs: Elie Bou Assi (Université de Montréal) & Philippa Karoly (University of Melbourne) Karim Jerbi (Université de Montréal) - AI/ML in neuroscience Émile Lemoine (Université de Montréal) - AI/ML in epilepsy: Good practice Colin Josephson (University of Calgary) - Bias in AI
SESSION 4	How to use open-access neuroinformatics for data sharing and analysis at scale?
17h15 – 17h45	Chair: Nishant Sinha (University of Pennsylvania) Nishant Sinha (University of Pennsylvania) - Harnessing epilepsy databases for translational science Zack Goldblum (University of Pennsylvania) - Demo on data analysis on cloud
17h45	Welcome drink

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Tuesday, June 3, 2025

8h00 – 8h15

Conference opening

Patrick Cossette (Dean, Fac. of Medicine, Université de Montréal) and
Alexandre Prat (Director, Dept. of Neuroscience, Université de Montréal)

8h15 – 9h00

Keynote: Samuel Wiebe (University of Calgary) - From hope to reality: Has there been progress in epilepsy outcomes?

SESSION 1

Do we know how a focal seizure starts?

9h00 – 10h30

Chair: Marco de Curtis (Neurological Institute in Milano)

Catherine Schevon (Columbia University) - Interplay of cell-type specific firing at the ictal transition in humans

Christophe Bernard (Aix Marseille University) - Understanding Focal Seizure Onset

Marco de Curtis (Neurological Institute in Milano) - Ictogenesis -in vitro- beyond neurons

10h30 – 10h50

Break

SESSION 2

Network theory of epilepsy: A revolution or much ado about nothing?

10h50 – 12h20

Chairs: Jean Gotman (McGill University) & Hitten Zaveri (Yale School of Medicine)

Rachel Smith (University of Alabama at Birmingham) - Using Neural Resonance to Guide Seizure Induction with Electrical Stimulation

Eishi Asano (Wayne State University) - How tractography can help us understand the propagation of epileptic activity?

Joon Kang (Johns Hopkins University) & Sri Sarma (Johns Hopkins University) - Seizure suppression network: An intrinsic mechanism for seizure termination, a new target for stimulation treatment?

12h20 – 13h00

Lunch

13h00 – 14h00

Poster session

SESSION 3

Is slow activity important in epilepsy?

14h00 – 15h30

Chairs: Yujiang Wang (Newcastle University) & Brian Lundstrom (Mayo Clinic in Rochester)

Akio Ikeda (Kyoto University) - Early ictal: Neuronal and astrocyte correlates of low voltage fast activity and infraslow waves at seizure onset

Michael Wenzel (IEECR University Medical Center) - Post-ictal: what and where is spreading depression?

Brian Lundstrom (Mayo Clinic in Rochester) - Interictal: what mechanisms underlie infraslow activity?

15h30 – 15h50

Break

SESSION 4

The dual role of the thalamus in seizure networks and sleep

15h50 – 17h20

Chairs: Birgit Frauscher (Duke Comprehensive Epilepsy Center) & Lukas Imbach (Swiss Epilepsy Center)

Pariya Salami (Harvard Medical School) - The role of thalamic nuclei in epileptic networks: Insights from presurgical evaluation

Birgit Frauscher (Duke Epilepsy Center) - Sleep, Epilepsy and the Thalamus: Lessons to learn from simultaneous sleep, thalamic and cortical recordings

Lukas Imbach (Swiss Epilepsy Center) - Neurophysiological biomarkers in the anterior thalamus for DBS response

Rina Zelmann (Harvard Medical School) - Stimulation targets in the thalamus



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Wednesday, June 4, 2025

8h15 – 9h00 **Keynote: Jean Gotman (McGill University) - *Epilepsy and Montreal: a 100-year-old love story***

SESSION 1 Modern analysis of scalp EEG: What is the real impact?

9h00 – 10h30 **Chairs: Erin Conrad (University of Pennsylvania) & Elie Bou Assi (Université de Montréal)**
ChenXi Sun (Harvard University) - *A foundation model for EEG analysis*
Émile Lemoine (Université de Montréal) - *Beyond spikes*
Sándor Beniczky (Aarhus University) - *Automated EEG interpretation*

10h30 – 10h50 *Break*

SESSION 2 Modern analysis of intracranial EEG: Is it just for engineers?

10h50 – 12h20 **Chairs: Dang Nguyen (Université de Montréal) & Kathryn Davis (University of Pennsylvania)**
William Stacey (University of Michigan) - *Quantitative analysis of interictal and ictal intracranial EEG*
Petr Klimes (Czech Academy of Science) - *Machine learning approaches of intracranial EEG for outcome prediction*
Brian Litt (University of Pennsylvania) - *Dynamic atlases and multicenter analyses*

12h20 – 13h00 *Lunch*

13h00 – 14h00 *Poster session*

SESSION 3 Virtual brain twins in epilepsy

14h00 – 15h30 **Chairs: Eilif Muller (Université de Montréal) & Huifang Wang (Université Aix Marseille)**
Huifang Wang (Université Aix Marseille) - *Virtual brain twins and its conceptual foundations*
Fabrice Bartolomei (Hôpital de la Timone) - *Virtual brain twins: Clinical perspectives*
Nigel Pedersen (University of California, Davis) - *Identifying the epileptogenic networks and improving SEEG with personalized virtual brain stimulation*

15h30 – 15h45 **Testimony of epilepsy: Susan Arthurs (Alliance for Epilepsy Research)**

15h45 – 18h00 **Free time in Montreal (2h15 before excursion boarding)**

18h00 - 22h30 Excursion and dinner*

Dinner cruise on the St. Lawrence River, featuring views of Montreal and a 3-course meal

BOARDING at 18h00

[Grand Quai de Montréal](#)

[200 Rue de la Commune O, Montréal, QC H2Y 4B2](#)

DEPARTURE at 19h00

RETURN and DISEMBARKATION at 22h30

**If you confirmed your attendance for the excursion during early-bird or regular registration, your excursion ticket will be included in your badge.*



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Thursday, June 5, 2025

8h15 – 9h00

Keynote: Aaron Courville (Université de Montréal) - AI Frontiers: Exploring New Horizons in AI

SESSION 1

Subscalp EEG: Ready for prime time?

9h00 – 10h30

Chairs: Mark Richardson (Kings College London) & Mark Cook (University of Melbourne)

Mark Richardson (Kings College London) - Importance of subcutaneous EEG recordings for research and treatment in epilepsy

Jonas Duun-Henriksen (UNEEG medical) - Signal properties of subcutaneous EEG recordings: chances and challenges

Mark Cook (University of Melbourne) - Advancements in epilepsy management: Insights from the Minder monitoring system

Maxime Baud (Bern University Hospital) - Parallels between intracranial and subscalp EEG recordings

10h30 – 10h50

Break

SESSION 2

Wearables for epilepsy research & management: Are they worn?

10h50 – 12h20

Chairs: Tobias Loddenkemper (Harvard University) & Philippa J Karoly (University of Melbourne)

Benjamin Brinkmann (Mayo Clinic in Rochester) - Which smartwatch should I use?

Solveig Vieluf (LMU Munich) - Augmenting seizure management (combining wearables with other records)

Christian Meisel (Berlin University Medicine) - Seizure early warning systems

Rachel Stirling (University of Melbourne) - Seizure risk trends in wearable data

12h20 – 13h30

Lunch

SESSION 3

Seizure forecasting: Predicting its future

13h30 – 15h00

Chair: Maxime Baud (Bern University Hospital)

Ralph Andrzejak (Pompeu Fabra University) - Good Practice

Philippa Karoly (University of Melbourne) - Statistical modelling

Yujiang Wang (Newcastle University) - Assessing time series and synchrony

15h00 – 15h20

Break

SESSION 4

Selected presentations from abstracts

15h20 – 16h50

Chair: Daniel Goldenholz (Harvard BIDMC)

Adrián Gutiérrez Gómez (University Hospital Bonn) - Hippocampal spreading depolarization as a key epilepsy disease factor in mice and humans

Xiaoyan Wei (Duke University) - Validation of high-density EEG source imaging patterns using the MNI intracranial electroencephalography atlas

Kimberly Liang (University of Pennsylvania) - Scalable Multicenter Normative IEEG Atlas: Harnessing Epilepsy Databases for Translational Science

Zachary Sanger (University of Minnesota) - Optimization of Anterior Nucleus of Thalamus DBS Suppresses Slow Gamma LFP Oscillations in Responders to Therapy for Refractory Epilepsy

Ke Xie (Montreal Neurological Institute-Hospital) - Brain-wide excitation/inhibition imbalance in temporal lobe epilepsy and associations with microcircuit organization, clinical parameters, and cognitive dysfunction

Laura Krumm (Charité University Hospital) - Towards a universal map of EEG (UM-EEG) to monitor and predict brain states in unresponsive patients

Kevin Xie (University of Pennsylvania) - Simulating Antiseizure Medication Trials: An Informatics and Causal Inference Approach



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Friday, June 6, 2025

SESSION 1	Is SEEG helpful before brain stimulation device implants?
8h30 – 10h00	Chairs: Greg Worrell (Mayo Clinic in Rochester) & Brian Lundstrom (Mayo Clinic in Rochester) Dileep Nair (Cleveland Clinic) - SEEG to guide RNS implants Catherine Chu (Massachusetts General Hospital) - SEEG stimulation to guide permanent device parameters Nicholas Gregg (Mayo Clinic in Rochester) - Thalamocortical SEEG stimulation
10h00 – 10h20	Break
SESSION 2	Epilepsy databases: Insights and opportunities
10h20 – 11h20	Chairs: Brian Litt (University of Pennsylvania) & Nishant Sinha (University of Pennsylvania) Joost Wagnaar (University of Pennsylvania) - Data platforms: epilepsy.science Brandon Westover (Harvard University) - Brain Data Science Platform for scalp EEG Birgit Frauscher (Duke Comprehensive Epilepsy Center) - ANPHY-Sleep Benjamin Brinkmann (Mayo Clinic in Rochester) - My Seizure Gauge Wearable Device Dataset
SESSION 3	Panel – From vision to practice: Ensuring research becomes clinical reality
11h20 – 12h00	Chairs: William Stacey (University of Michigan) & Brian Litt (University of Pennsylvania) Jean Gotman (McGill University) Mark Cook (University of Melbourne) Brandon Westover (Harvard University) Sándor Beniczky (Aarhus University)