

MEG@McGill Comprehensive Training

Monday, April 24, 2017

08:00 Breakfast & Welcome

Foundations of MEG/EEG

08:30 The physiological origins of scalp signals: *Sylvain Baillet, PhD, Professor, Director of MEG Research, McConnell Brain Imaging Centre*

09:00 Basic signal extraction: ERP/ERFs, *Jeremy Moreau, PhD Student, neuroSPEED Lab*

10:00 Q&A, coffee break

10:15 Spectral analysis, *Peter Donhauser, PhD Student, neuroSPEED Lab*

11:15 Source imaging 101: *Christophe Grova, PhD, Assistant Professor, Physics Dpt, and PERFORM centre, Concordia University*

12:00 - 13:00 Lunch break

13:00 **Keynote : Multivariate pattern classification of MEG signals reveals the spatiotemporal and representational dynamics of the ventral visual pathway:** *Dimitrios Pantazis, Research Scientist, Director of MEG Lab, McGovern Institute for Brain Research at MIT*

14:30 The Functional and Effective Connectivity Toolkit for MEG Scientists: *Sylvain Baillet, PhD, Professor, Director of MEG Research, McConnell Brain Imaging Centre*

15:30 Applications of MEG and MSI in the presurgical evaluation for intractable paediatric epilepsy: *Jeremy Moreau, PhD Student, neuroSPEED Lab*

16:00- 18:00 Wine and Cheese: MEG by Example poster session

<http://www.mcgill.ca/bic/training-events/training-programs/meg-comprehensive-training>

MEG by Example Poster Session

Inter-regional phase-amplitude coupling between inferior frontal gyrus and auditory cortex predicts near threshold pitch discrimination performance
Soheila Samiee, PhD student, neuroSPEED Lab

A Real-time imaging neurofeedback in MEG
Soheila Samiee, PhD student, neuroSPEED Lab

High-resolution retinotopic maps estimated with magnetoencephalography
Konstantinos Nasiotis, PhD student, Pack Lab

MEG reveals filter modulation at multiple time points throughout cognitive training
Jonathan Cote, PhD student, EVS Lab

Modulation of the Beta rhythm during Action Observation
Lucie Luneau, PhD Student, Kalaska Lab, University of Montréal

Neural correlates of rapid recalibration to audiovisual asynchrony
Therese Lennert, PhD, neuroSpeed Lab

Changes in motor connectivity associated with aging based on cortico-cortical and corticomuscular coherence
Alba Xifra Porxas, PhD Student, Mitsis Lab & Sara Larivière, Master Student, Boudrias Lab, McGill University

Detection and localization of oscillatory sources in MEG using subspace scanning
Peter Donhauser, PhD student, neuroSPEED Lab

Selective entrainment of theta-oscillations in the dorsal stream causally boosts auditory working memory
Philippe Albouy, PhD, neuroSPEED Lab and Centre for Research on Brain, Language

Evaluation of the Possible Effect of Neurofeedback Training on ADHD
Jessica Wang, Student, neuroSPEED Lab

The value of "negative" MEG studies: Defining the functional deficit zone using spontaneous MEG in children with intractable epilepsy
Jeremy Moreau, PhD Student, neuroSPEED Lab

Fusion of EEG and MEG increases the spike-to-spike reproducibility rate
Rasheda Arman, PhD student, Multimodal Functional Imaging Lab, McGill University

Tuesday, April 25, 2017

09:00 - 12:00 **MEG in practice: Instrumentation and paradigm design**
Introduction to MEG instrumentation & environment
Paradigm design considerations

12:00 - 13:00 **Lunch break**

13:00 - 17:00 **Break-out groups per neuroscience interest:**
Design your first experiment
Form focus groups (vision, attn., memory, sensorimotor, etc.)
Brainstorm and design your first MEG study
Use Psychtoolbox-3 Matlab script templates

Wednesday, April 26, 2017

Data collection in practice
MEG: 2 hours max per group
Launch Freesurfer pipeline on acquired MRI volumes

09:30 - 13:30 Groups 1 & 2

14:00 - 18:00 Groups 3 & 4

Thursday, April 27, 2017

08:00 - 18:00 **Brainstorm hands-on training on data just collected**
Each group will be assisted by an MEG expert to do pre-processing/basic analysis on the data they collected.

Friday, April 28, 2017

09:00 -13:00 **Advanced analysis:** each group assisted by an MEG expert
Prepare presentations

14:00 - 16:00 **Data analysis competition**
Each group presents to the MEG@McGill Team (20 min)
Best narrative & analysis wins special prize!

17:00 - 19:00 **Montreal 5@7 and dinner**

Additional Training Information

The training will take place at the Montreal Neurological Institute, 3801 University St, Montreal:

Monday, April 24, de Grandpré Communications Centre

- Enter at the main entrance of the MNI. Go left to the end of the hall, then right to end of the hall. Take the C elevators to 3B, and follow the signs to de Grandpré.

Tuesday - Friday, April 25-28, MEG Suite, NWB216 -

Enter at the main entrance of the MNI. Go left to the end of the hall, then right to end of the hall. Take the C elevators to 3B, go straight ahead past the MRI, through the double grey doors and up the hall. The MEG suite is on the left.

The hands-on training will be in the MEG suite. We will divide you into 4 groups with similar neuroscience interests. You will be working on our computers to do all the data collection and processing. Feel free to bring a hard drive with you if you would like to take your data home at the end of the class.

For Wednesday, we will be collecting MEG data using the paradigms you will design in your group. A volunteer will be needed from each group. Groups 1 and 2 will be collecting data in the morning and Groups 3 and 4 will be in the afternoon. Therefore, you will have one half day free, when not collecting data.

Thursday will be a hands-on tutorial of the Brainstorm software. You will use the data you collected to learn the software and a basic analysis pipeline.

Friday will be an introduction to more advanced analysis. In addition your group will prepare a short presentation to share results and what you have learned. The workshop should be finished on Friday by 4pm, and if interested, we will organize 5@7 (Happy Hour) and dinner as a group.

McGill has a hotel program:

<http://www.mcgill.ca/travelservices/accommodations/hotelprogram/listing>. just mention McGill when booking a room.

Montreal has a very good public transit system, so you may find other options along the bus or metro lines. Parking is very limited near the MNI.