

OHBM ONLINE SATELLITE MEETING

SEPTEMBER 2 - 4, 2026 | ZOOM

**SEPT.
2ND**

12:00 - 16:00 UTC

EDUCATIONAL COURSE:
25 years of FSL

**SEPT.
3RD**

10:00 - 12:00 UTC

SYMPOSIUM:
*AI for improved Brain-
Behavior Mapping*

12:00 - 13:00 UTC

KEYNOTE:
Kim Doell

13:15 - 14:30 UTC

SYMPOSIUM:
*Validity beyond test-
retest reliability*

**SEPT.
4TH**

6:00 - 8:00 UTC

SYMPOSIUM:
*Scan locally, model brain
development globally*

13:15 - 14:15 UTC

SIG SHOWCASE

14:15 - 15:30 UTC

*Bridging Scales: Computational
and Neurophysiological
Approaches to Human E/I
Dynamics*

SEPT.
2ND

12:00 - 16:00 UTC

EDUCATIONAL COURSE:
25 years of FSL

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DESCRIPTION

Over the last 25 years, FSL has been widely used in MRI research, supporting analysis in laboratories around the world and across many different modalities. This one-off educational course marks that anniversary through talks that cover FSL's origins and its current use, with emphasis on a new generation of tools that extend its capabilities across multiple domains to address challenges in modern neuroimaging data.

These include: methods for multimodal registration between subjects, deep-learning approaches for lesion segmentation, frameworks that exploit large datasets to model population variability in functional MRI, techniques for identifying microstructural changes in diffusion MRI, dedicated tools for MR spectroscopy analysis, and approaches for building robust, reproducible pipelines.

The aim is to provide participants with a solid understanding of what each tool does, the rationale behind the methods they implement, and how the different components fit together in real analyses. The course combines short lectures with practical demonstrations, aimed at both new and experienced users. Throughout, we highlight FSL's approach to development: robust, open-source, open-access, clearly documented and well-supported tools, complemented by extensive teaching resources.

The session is independent from the standalone FSL course: it offers an OHBM-specific introduction that highlights widely used methods alongside newer tools that many users may not yet have encountered. Participants will leave with a clearer understanding of how to select and run appropriate FSL tools for different modalities, how to interpret key outputs, and where to find resources that support further hands-on practice after the course.

LEARNING OBJECTIVES

By the end of this course, participants will be able to:

- Identify both the long-established and cutting-edge FSL tools available for structural, functional, diffusion and spectroscopy MRI, and understand the types of data and research questions each tool is designed to address.
- Apply recently developed FSL tools to analyse modality-specific data, including resting-state fMRI, diffusion MRI and MR spectroscopy, and interpret the results at individual, clinical, and population levels.
- Effectively leverage the richness of multimodal imaging datasets by using FSL's multimodal analysis tools and by building integrated pipelines.

PRESENTERS: Stephen Smith, Frederik Lange, Vaanathi Sundaresan, Rezvan Farahibozorg, Amy Howard, William Clarke, Michiel Cottaar

SEPT.
3RD

10:00 - 12:00 UTC

SYMPOSIUM:
AI FOR IMPROVED BRAIN-BEHAVIOR
MAPPING

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DESCRIPTION

These topics are better presented in symposium format as our goal is to provide a broad overview (rather than deeper detailed methods review) of the potential for AI in neuroimaging by showcasing a few examples of where it has made advances, and to remind researchers of its pitfalls. The symposium also allows individuals to present their work in a standard slides format (rather than a roundtable) so that attendees can gain knowledge on some of the details of the methods and results.

LEARNING OBJECTIVES

Attendees will:

- 1) Understand how AI can enhance brain-behavior mapping accuracy and provide mechanistic inference
- 2) Gain practical guidance for how AI is used to integrate modalities in a scalable, generalizable, and reproducible way
- 3) Obtain insight as to how AI models could be used to intervene on brain function - and potentially behavior.

PRESENTERS: Catie Chang, Keith Jamison, Yuanzhe Liu, Petra Ritter

SEPT.
3RD

13:15 - 14:30 UTC

SYMPOSIUM:
VALIDITY BEYOND TEST-RETEST
RELIABILITY

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DESCRIPTION

In order to understand how the structure and function of the brain contribute to mental illness, we must understand how mental illness is defined and measured. In the search for neural correlates of mental illness, the quality of our measures of mental illness is just as critical as the quality of our measures of the brain. The neuroimaging community need not take the lead in validating measures of mental illness, but we do need to understand what the challenges to that validity are so that we can select appropriate measures. Understanding the limitations of our measures of mental health may also shed light on the limited extent to which neuroimaging has been found to correlate with mental illness.

Addressing this topic as a symposium will highlight the importance of quality measures of mental illness to making progress in developing the clinical impact of neuroimaging. It will allow a greater proportion of the community to learn about the topic. And it will allow us to combine presentations on the difficulties of measuring mental illness with novel approaches that may address some of those shortcomings, even in data that's already been collected.

LEARNING OBJECTIVES

- Learn the difference between screening measures and severity measures and how these different measures are validated.
- Understand what measurement invariance tests and why it is important.
- Learn about new techniques for extracting mental illness severity scores from free text.

PRESENTERS: Dylan Nielson, Paweł Atroszko, Jeggan Tiego, Gregory Kiar

SEPT.
4TH

6:00 - 8:00 UTC

SYMPOSIUM:
SCAN LOCALLY, MODEL BRAIN
DEVELOPMENT GLOBALLY

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DESCRIPTION

Longitudinal neurodevelopmental cohorts have become essential for understanding how the brain changes across childhood and adolescence, and for characterizing the impacts of exposures, and neurological, neurodevelopmental and mental health conditions. For research findings to be generalizable, broad representation in the datasets being modeled is essential, including from a variety of geographic locations. To this end, both established and emerging neurodevelopmental cohorts from around the world are contributing essential data. In this symposium, presenters will introduce established and emerging neurodevelopmental cohorts spanning four continents, the: 1) Developing Chinese Color-Nest Project (devCCNP) and extensions, 2) IMAGEN study, 3) Drakenstein Child Health Study (DCHS), and 4) Canadian Pediatric Imaging Platform (C-PIP). Speakers will discuss region-specific considerations for study-design, how these data have been used to study temporally specific perturbations like COVID-19, and some of the cutting-edge analyses facilitated by these large longitudinal multimodal datasets. Opportunities and special considerations around data access and sharing will also be discussed. We hope this symposium will increase the re-use of geographically diverse neurodevelopmental cohort data and catalyze the development of new and diverse neurodevelopmental cohorts and international collaborations.

LEARNING OBJECTIVES

Through this symposium participants will learn about:

- Unique challenges and opportunities of building neurodevelopmental cohorts across diverse geographic regions, including ethical and regulatory considerations
- Cutting-edge neurodevelopmental research enabled by these rich multimodal datasets
- Opportunities for accessing cohort data from around the world

PRESENTERS: Signe Bray, Xi-Nian Zuo, Marie-Laure Martinot, Nynke Groenewold

SEPT.
4TH

14:15 - 15:30 UTC

BRIDGING SCALES: COMPUTATIONAL
AND NEUROPHYSIOLOGICAL
APPROACHES TO HUMAN E/I DYNAMICS

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DESCRIPTION

The topic proposed in this symposium is relevant to many HBM attendees as the study of E/I balance via different approaches has gained a lot of attention in our neuroimaging community. Our symposium aims to present recent developments in how we look at E/I balance and how we can leverage these developments to yield more insights into how cognition arises in healthy controls and how it is impaired in people with neurodegenerative diseases.

The four speakers bring in a wide range of expertise, from clinical applications to model development and from fMRI to MEEG. In addition, the speakers are complemented by two organizers who will prepare one or two small questions at the end of each presentation to start and steer the general discussion at the end of the presentations.

LEARNING OBJECTIVES

- To describe how aperiodic EEG/MEG metrics and large-scale biophysical models can be used to non-invasively estimate cortical excitation–inhibition (E/I) balance across development, aging, and neurological disease.
- To explain the temporal and functional significance of event-related and task-related 1/f slope dynamics, and how alterations in these dynamics relate to cognitive performance and neurodegenerative processes.
- To identify emerging computational tools that enable scalable, individualized inference of E/I-related parameters from neuroimaging data.

PRESENTERS: Patrycja Kałamała, Fahimeh Akbarian, Shaoshi Zhang, Amin Saberi