

UE Computational Neurosciences - with the support of Labex Cortex

Coordination Matteo Di Volo (m.divolo@gmail.com) & Jérémie Mattout (jeremie.mattout@inserm.fr)

“Bridging empirical findings and computational models, the ubiquitous example of adaptation”

Thursday December 1, 2022 (M2 students only)

Amphitheater “Neurocampus” (CH Le Vinatier, Bron)

- 09.30 - 10.00 **Welcome and General Introduction** M. Di Volo (SBRI) & J. Mattout (CRNL)
- 10.00 - 12.30 **Oral presentations by Student groups**
- 14.00 – 15.00 **Introductory lecture I: adaptation from a neurophysiological perspective** M. Di Volo
- 15.00 – 16.00 **Introductory lecture II: adaptation from a cognitive perspective** J. Mattout

Friday December 2, 2022 – Neuronal adaptation, from cell to populations

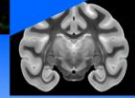
Amphitheater “Neurocampus” (CH Le Vinatier, Bron)

- 09.30 – 12.45 Duo (Experiment & Model) - Laurent Venance (Paris) & Hugues Berry (Lyon)
Spike timing dependent potentiation: from experiments to computational models
- 14.15 – 15.45 Matteo Di Volo (Lyon)
Cholinergic switch between two types of slow waves in cerebral cortex
- 16.00 – 17.30 Rodrigo Cofre (Paris)
Whole brain modelling explains context-dependent effects of cholinergic neuromodulation

Monday December 5, 2022 – Meso and Macro scale adaptation, from sensations to decisions

Amphitheater “Neurocampus” (CH Le Vinatier, Bron)

- 09.30 – 11.00 Françoise Lecaigard (Lyon)
Sensory adaptation and the mismatch negativity
- 11.15 – 12.45 Jakob Heinzle (Zürich)
The mismatch negativity and the Bayesian brain
- 14.15 – 17.30 Duo (Experiment & Model) - Emmanuel Procyk (Lyon) & Bruno Delord (Paris)
Inhibitory control of frontal metastability sets the temporal signature of primate cognition



Tuesday December 6, 2022 – Executive and motor control

Amphitheater “Neurocampus” (CH Le Vinatier, Bron)

- 09.30 – 11.00 James Bonaiuto (Lyon)
Selective alteration of human value decisions with medial frontal tDCS is predicted by changes in attractor dynamics
- 11.15 – 12.45 Romain Quentin (Lyon)
Multivariate methods to decode memory contents from neural recordings
- 14.15 – 15.45 Romain Ligneul (Lisbon, via visioconference)
From agent control to environmental control
- 16.00 – 17.30 David Thura (Lyon)
Models of decision-making in changing conditions

Wednesday December 7, 2022 – Artificial and altered adaptation

Amphitheater “Neurocampus” (CH Le Vinatier, Bron)

- 09.30 – 11.00 Noor Sajid (London)
Reclaiming saliency: rhythmic precision-modulated action and perception
- 11.15 – 12.45 Pauline Mouches (Lyon)
Adaptive artificial neural networks for neuroscience applications
- 14.15 – 17.30 Duo Christina Schmitz (Lyon) & Kristen Barc (Paris)
Perceptual biases in autism and neurotypics