fMRI Hands-on Training Session Schedule

Center for Magnetic Resonance Research

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OCTOBER 11th, 2005

8:00–8:30 Registration

Introductory Lectures (8:30 – 10:00)

8:30–10:00 ***Physiology and Mechanisms of fMRI*** Kamil Ugurbil

- Basics of MR imaging
- T2, T2* and T1 contrast in fMRI
- Neural activity vs. fMRI

10:00–10:30 Coffee Break and Informal Discussion

10:30–11:30 ***fMRI Sequences and Acquisition Strategies*** Xiaoping Hu

- Introduction
- Basic sequences for fMRI
- Pitfalls
- Remedies
- fMRI Acquisition Strategies

11:30 – 12:15

- Distortions and Field Inhomogeneity, Shimming Ivan Tkac

12:15–1:15 Lunch at the CMRR

1:15–2:15 ***Experimental Designs*** Cheryl Olman

- Typical fMRI experimental setups including
  Stimulus delivery, behavioral and physiological data collection
- Paradigm designs including block and single-trial (event-related) fMRI

2:15–5:15 **Hands On Data Acquisition**

- 3T and 7T fMRI experimental setups

(Physiological monitoring, monitoring task performance, synchronization of MRI data collection and paradigm presentation, RF Coils)

- fMRI Data Collection at 7T (Ute Goerke, Pierre-Francois van de Moortele,
- Stephane Lehericy, Gregor Adriany)

BOLD fMRI of a Motor Task with 16 Channel RF Coil
BLOCK Design Paradigm

- fMRI Data Collection at 3T (Cheryl Olman, Eddie Auerbach)

BOLD fMRI of a Visual Task with 8 Channel RF Coil
Event-Related Design Paradigm

OCTOBER 12th, 2005

DATA ANALYSIS

8:00-9:30 John Strupp

Basic Principles of parametric t-tests and cross-correlation, Bonferroni Correction, Clusters and General Linear Model

9:30–9:45 Break

9:45 – 10:45

Independent Component Analysis Federico de Martino

11:00-12:00 Pierre-Francois van de Moortele

Preprocessing Strategies in EPI fMRI Series

- Temporal Sampling
- Respiration and Cardiac Physiological Noise

12:00-1:00 Lunch

1:00–4:00

Hands on Data Analysis — John Strupp, Pierre-Francois van de Moortele
Cheryl Olman, Essa Yacoub, Stephane Lehericy, Steen Moeller, Federico de Martino

- Stimulate
- Brain Voyaguer
- SPM99