

GLM

Single Subject Analysis

Practical Session

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Preparation

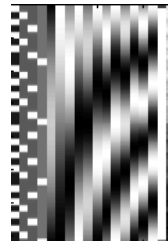
If you still have the files from the preprocessing ready on your computer, you do not need to do anything.

If not you can do the following.

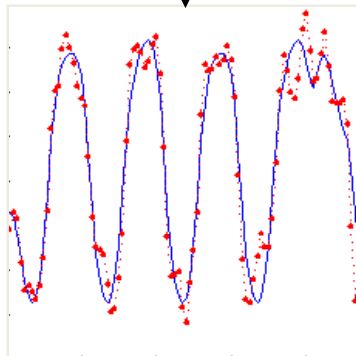
Download the Code from the lecture homepage, extract it and run the file `face_rep_spm12_batch2GLM.mat` from within the folder, where you also have your `face_rep` data. This should run the preprocessing once more.

GLM

Design matrix

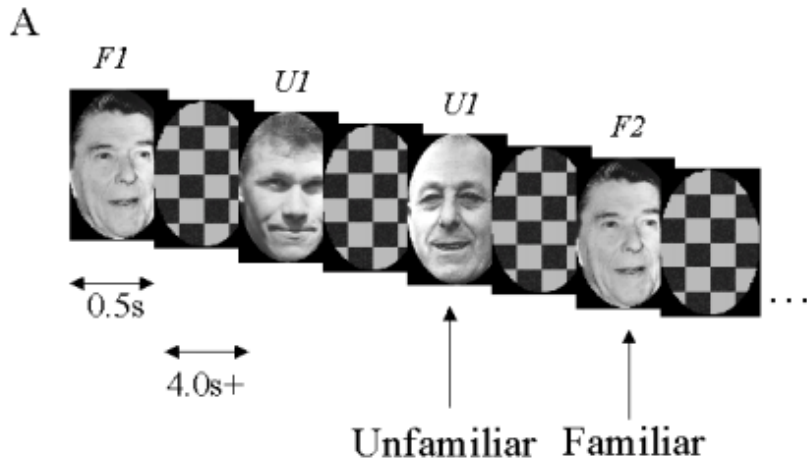


General linear model

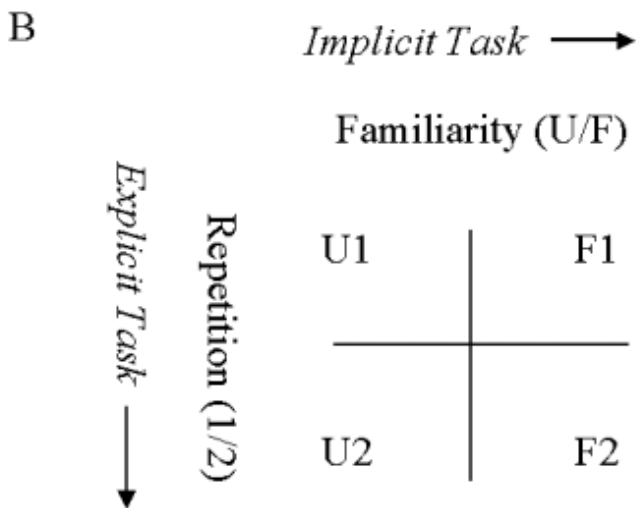


Parameter estimates

The Task



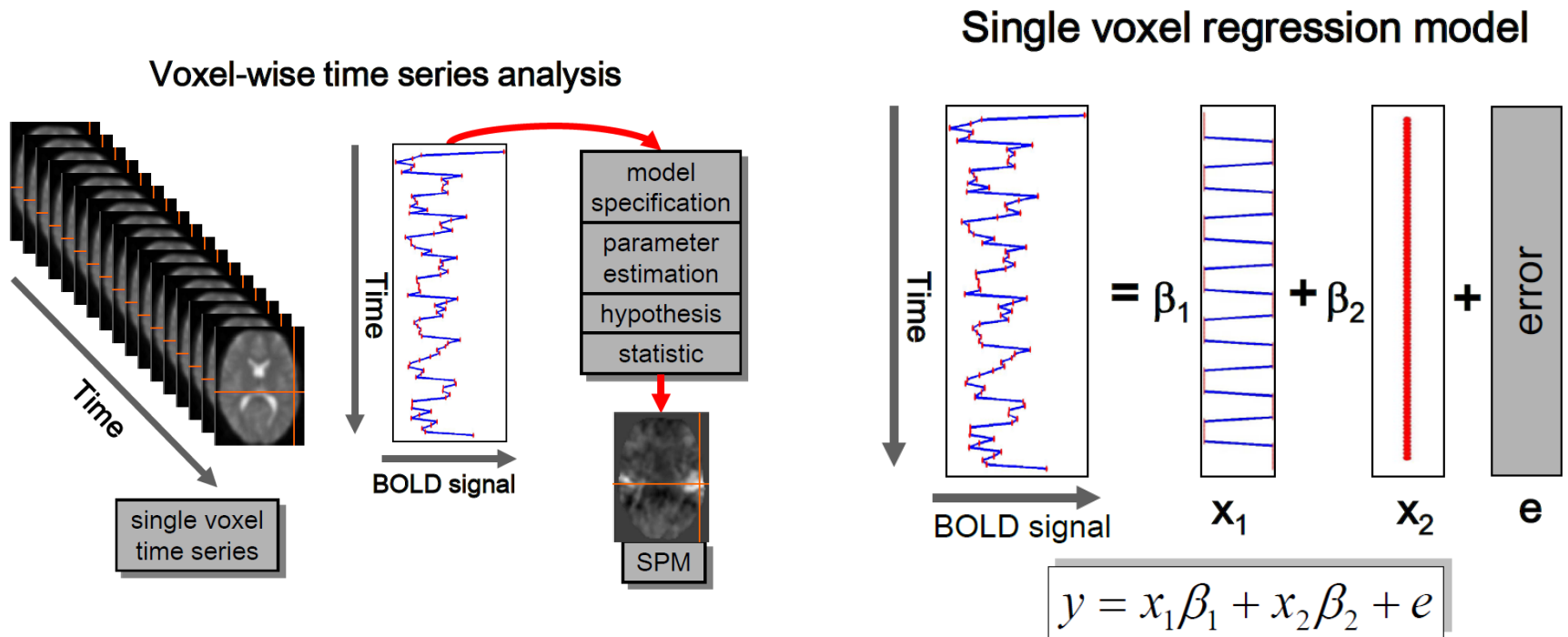
- Parametric factor "lag" = number of faces intervening between repetition of a specific face + 1
- Continuous EPI (TE=40ms, TR=2s) 24 descending slices (64x64 3x3mm²), 3mm thick, 1.5mm gap



Henson, R.N.A., Shallice, T., Gorno-Tempini, M.-L. and Dolan, R.J. (2002) Face repetition effects in implicit and explicit memory tests as measured by fMRI. *Cerebral Cortex*, 12, 178-186.

Figure 1. Schematic of the stimuli (A) and tasks (B).

Model Specification:



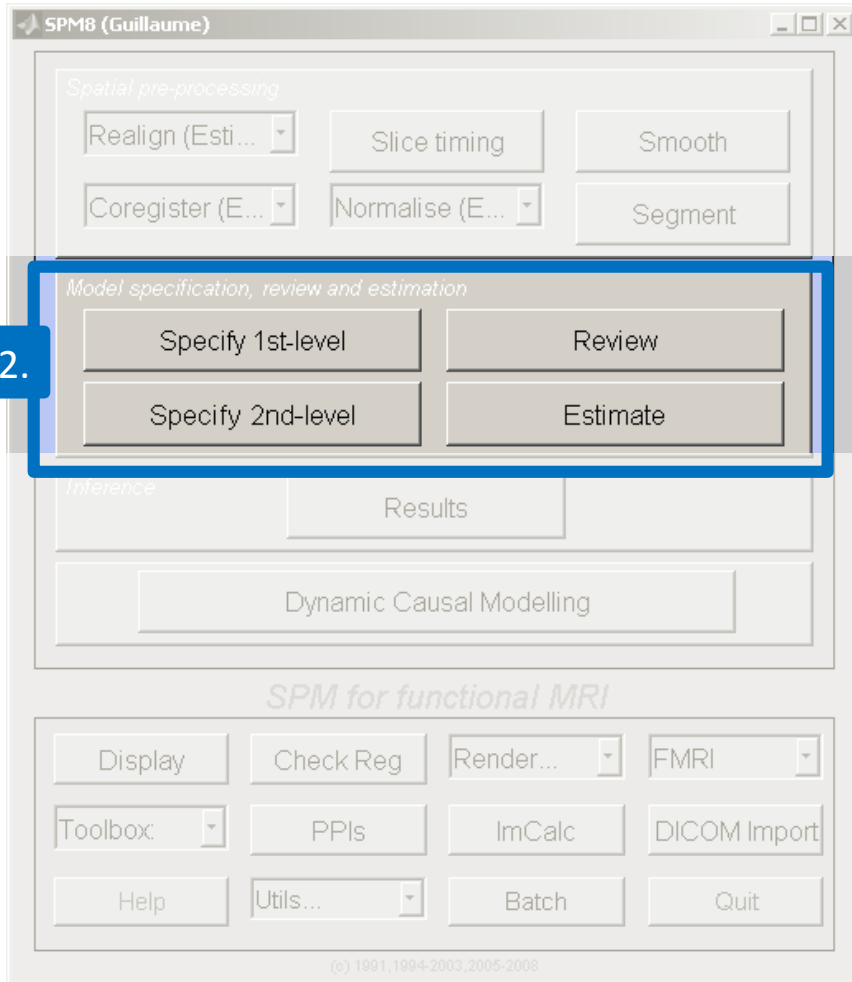
- What questions can we answer with this data set?
- How would your GLM look like?

→ 10 min Exercise



- What questions can we answer with this data set?
 - Difference between familiar and unfamiliar faces
 - Difference between repetition 1 and repetition 2
 - Difference between a repetition of a familiar face versus and unfamiliar one
- How would your GLM look like?
 - Regressors for familiar and unfamiliar and repetition 1 and 2
 - Regressors for motion

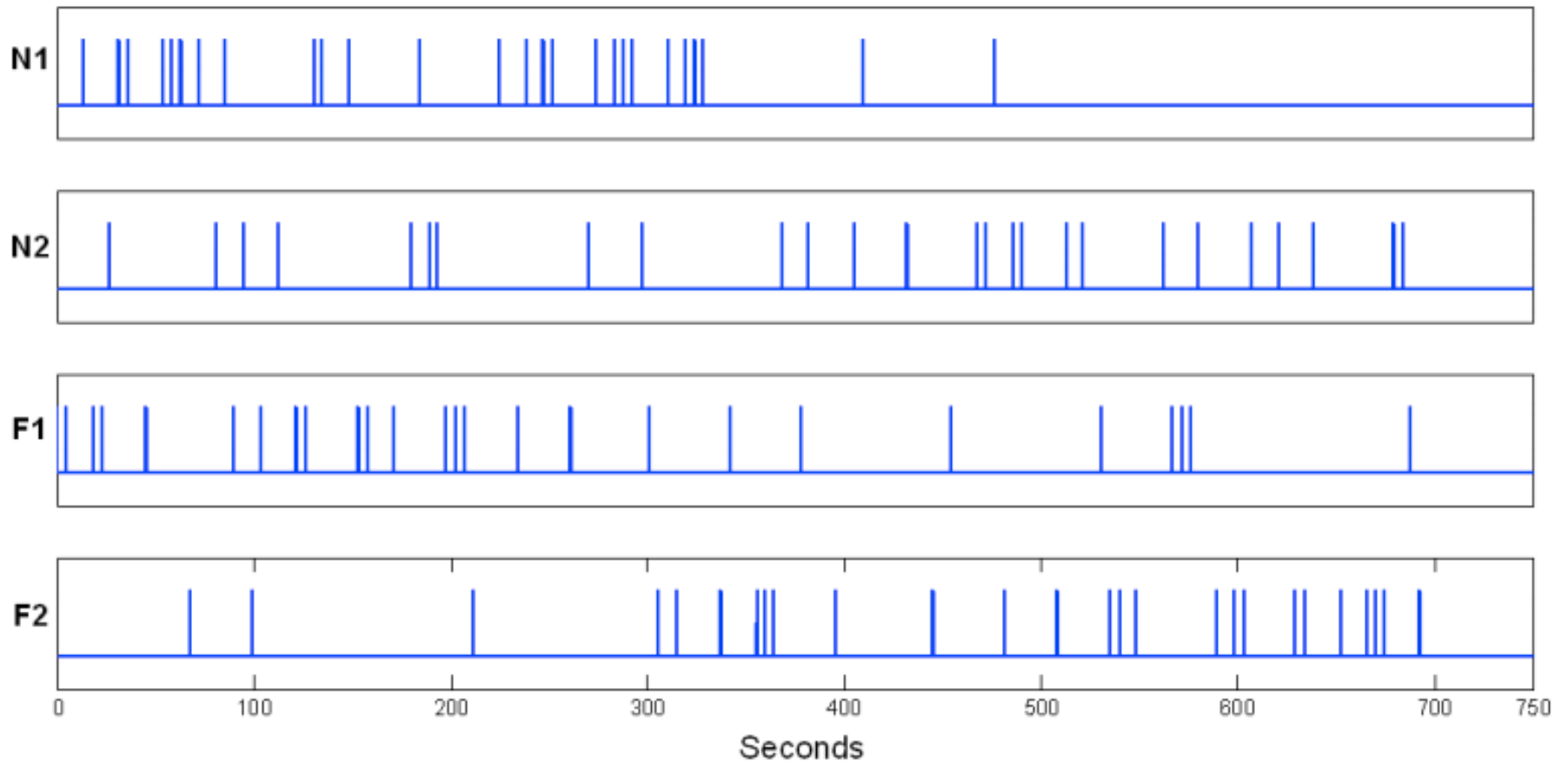
The SPM Graphical User Interface (GUI)



- Model Specification
 - Specify 1st level
 - Review
 - Estimate

stimulus onset times

load sots.mat file



Modelling

Statistical analysis: Design

Load `sots.ma`

Units of design: Scans

Interscan interval: 2

Microtime Resolution: 24

Mircotime Onset: 12

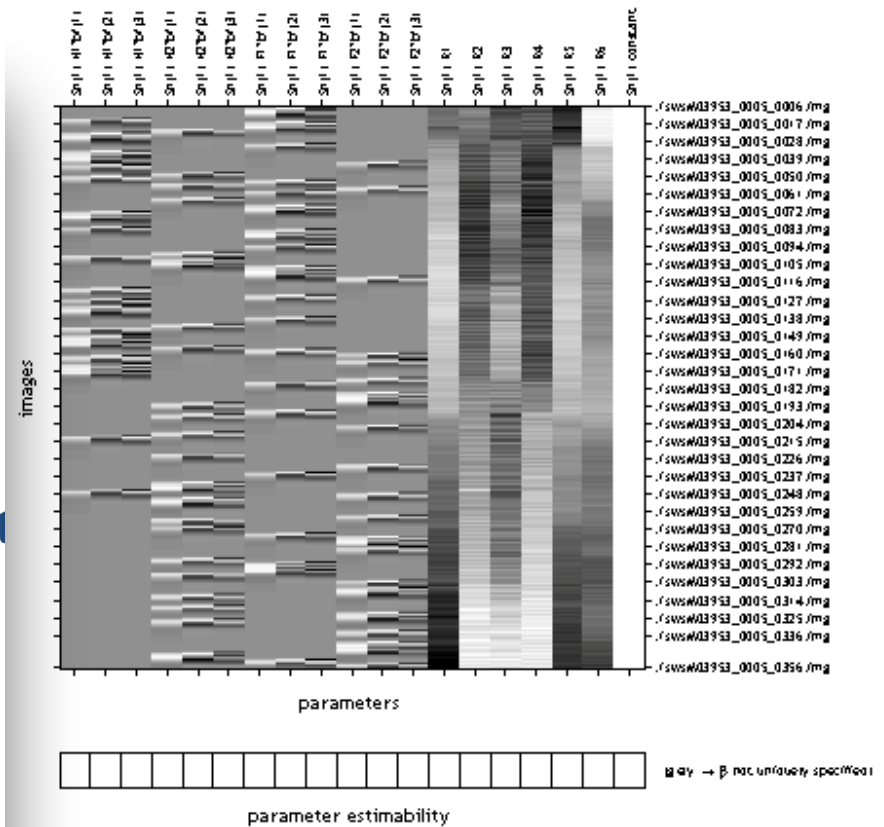
Use smoothed images: `swars...img`

Conditions: N1, N2, F1, F2

Multiple Regressors: realignment file `rp_.txt`

Factorial Design: Fam and Rep

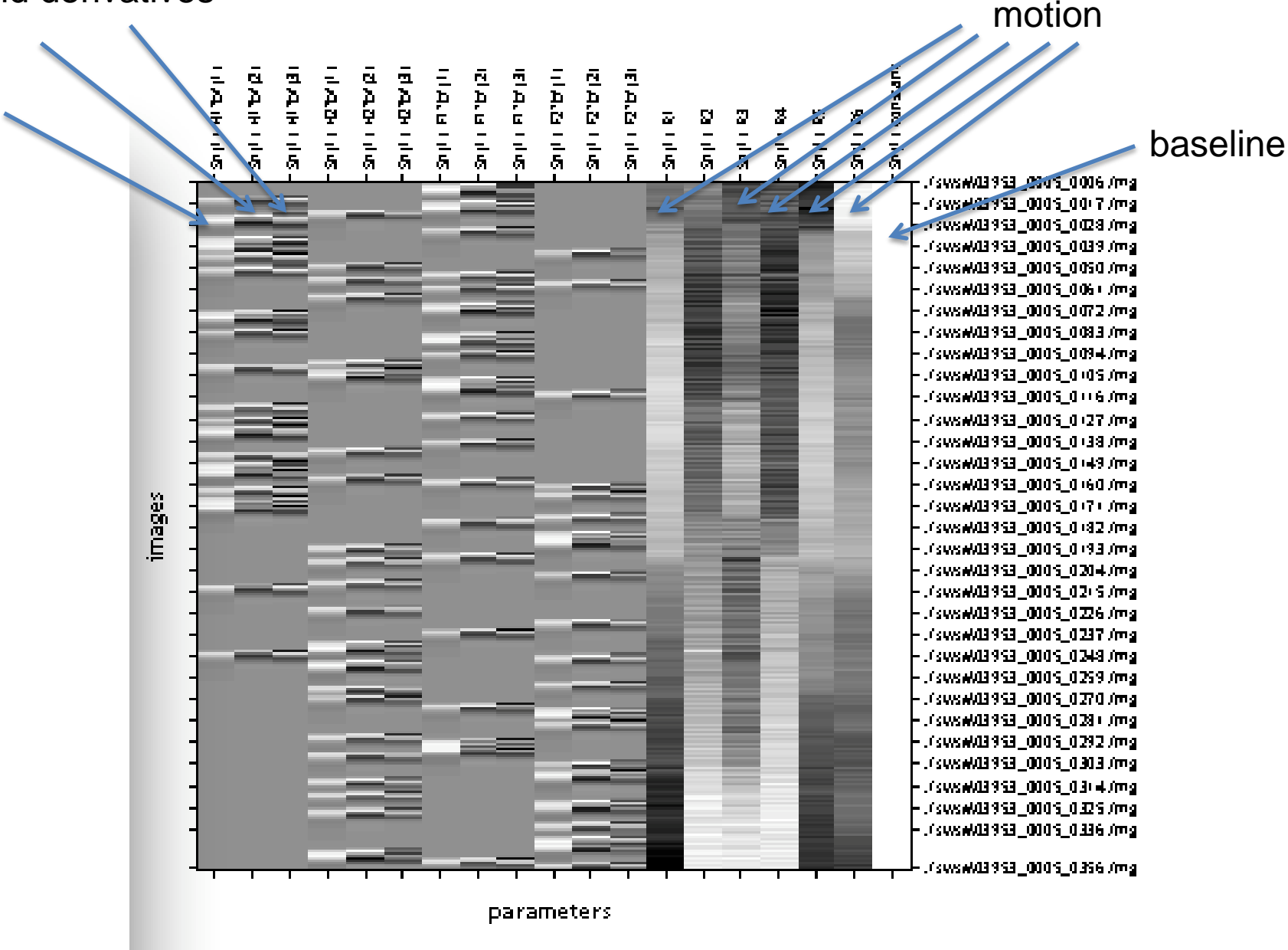
Canonical HRF: select all derivatives



Design description...

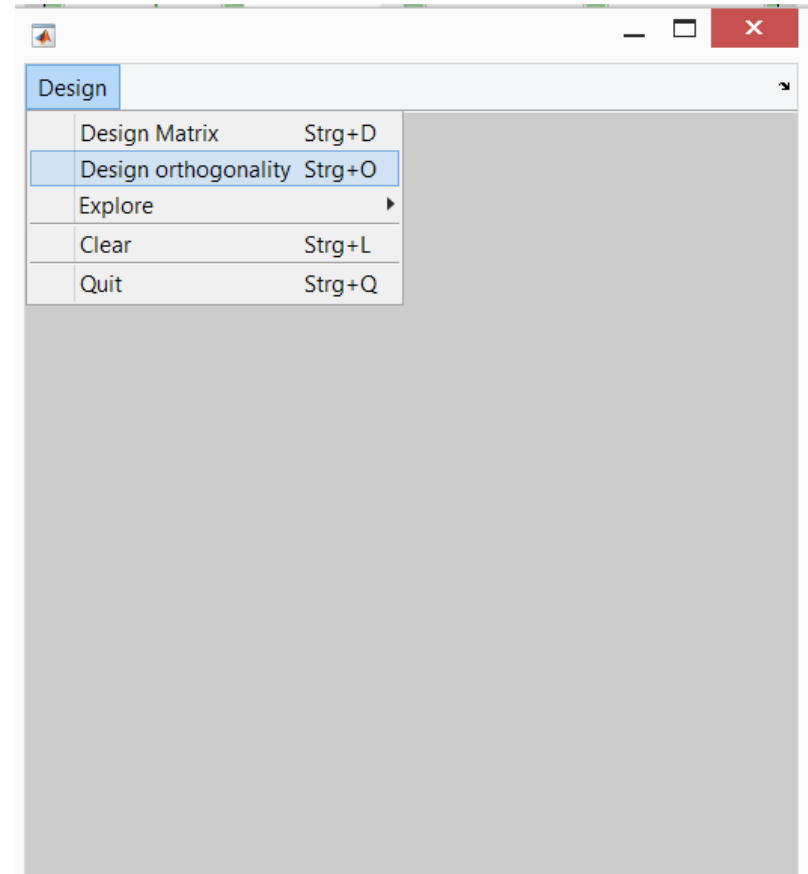
Basis functions : hrf (with time and dispersion derivative)
 Number of sessions : 1
 Trials per session : 4
 Interscan interval : 2.00 [s]
 High pass filter : Cutoff: 128 [s]
 Global calculation : mean voxel value
 Grand mean scaling : session specific
 Global normalisation : None

HRF and derivatives



Review your design

Click on the review button in the main menu and then use the options under Design to explore your design.



Regressors

