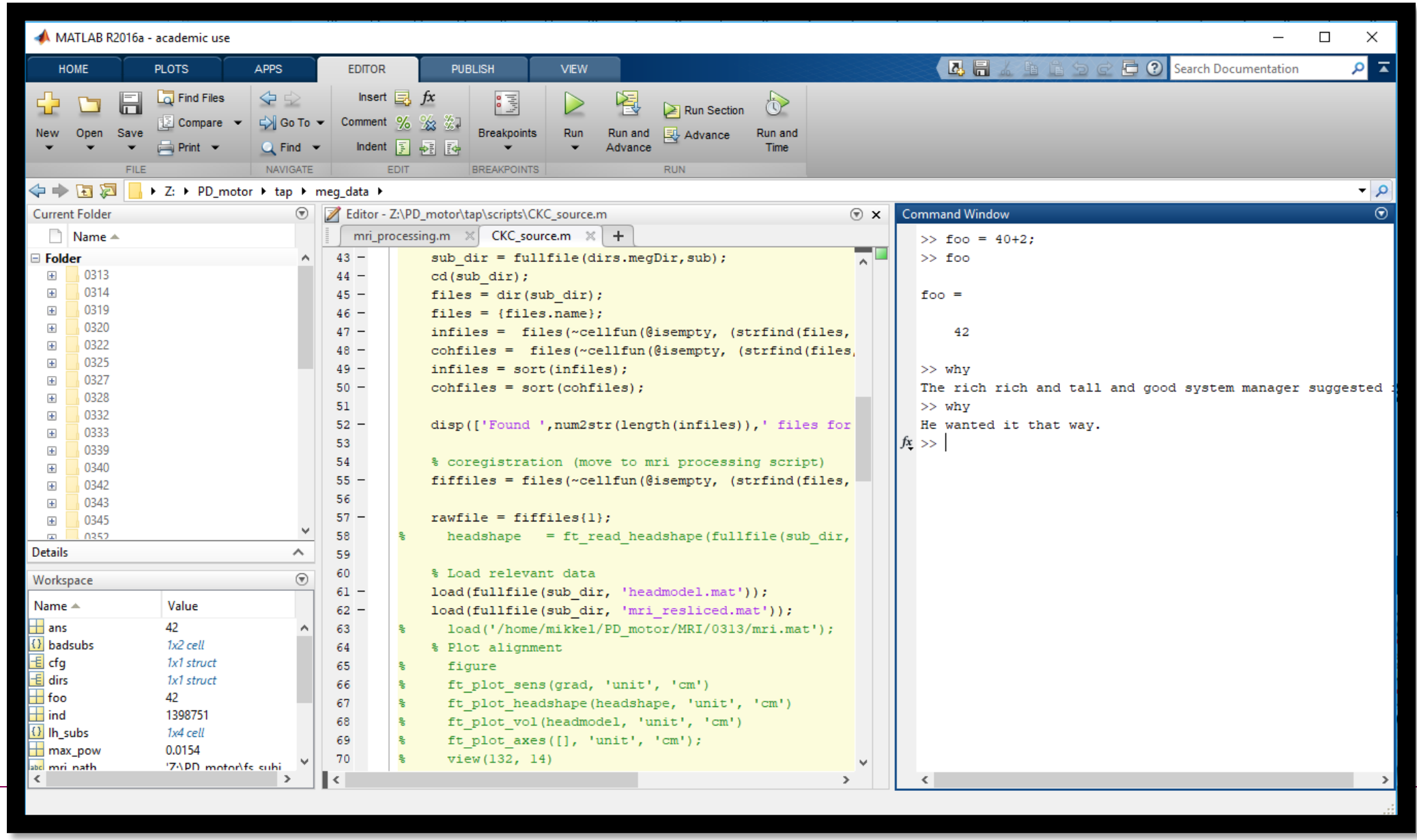
Quick intro to FieldTrip

Get started in 5 minutes


MATLAB R2016a - academic use
HOME
PLOTS
APPS
EDITOR
PUBLISH
VIEW
Search Documentation
New
Open
Save
Find Files
Compare
Print
Go To
Find
Insert
Comment
Indent
Breakpoints
Run
Run and Advance
Run Section
Advance
Run and Time
FILE
NAVIGATE
EDIT
BREAKPOINTS
RUN
Z: ▸ PD_motor ▸ tap ▸ meg_data ▸
Current Folder
Name
Folder
0313
0314
0319
0320
0322
0325
0327
0328
0332
0333
0339
0340
0342
0343
0345
Details
Workspace
Name
Value
ans 42
badsubs 1x2 cell
cfg 1x1 struct
dirs 1x1 struct
foo 42
ind 1398751
lh_subs 1x4 cell
max_pow 0.0154
Editor - Z:\PD_motor\tap\scripts\CKC_source.m
mri_processing.m
CKC_source.m
43 sub_dir = fullfile(dirs.megDir,sub);
44 cd(sub_dir);
45 files = dir(sub_dir);
46 files = {files.name};
47 infiles = files(~cellfun(@isempty, (strfind(files,
48 cohfiles = files(~cellfun(@isempty, (strfind(files,
49 infiles = sort(infiles);
50 cohfiles = sort(cohfiles);
51
52 disp(['Found ',num2str(length(infiles)),' files for
53
54 % coregistration (move to mri processing script)
55 fiffiles = files(~cellfun(@isempty, (strfind(files,
56
57 rawfile = fiffiles{1};
58 % headshape = ft_read_headshape(fullfile(sub_dir,
59
60 % Load relevant data
61 load(fullfile(sub_dir, 'headmodel.mat'));
62 load(fullfile(sub_dir, 'mri_resliced.mat'));
63 % load('/home/mikkel/PD_motor/MRI/0313/mri.mat');
64 % Plot alignment
65 % figure
66 % ft_plot_sens(grad, 'unit', 'cm')
67 % ft_plot_headshape(headshape, 'unit', 'cm')
68 % ft_plot_vol(headmodel, 'unit', 'cm')
69 % ft_plot_axes([], 'unit', 'cm');
70 % view(132, 14)
Command Window
>> foo = 40+2;
>> foo
foo =
42
>> why
The rich rich and tall and good system manager suggested
>> why
He wanted it that way.
>>

What is FieldTrip?

An open-source MATLAB toolbox for processing and analysing electrophysiological data

- Data-processing
- Analysis of evoked and induced responses
- Source analysis
- Connectivity
- Group analysis
- Statistics

Set up FieldTrip

Download FieldTrip:

http://www.fieldtriptoolbox.org/download

- Sign up
- Find current date
- Download
- Put in easy to access folder (e.g. /home/ or C:/)

GitHub:

- http://github.com/fieldtrip/fieldtrip

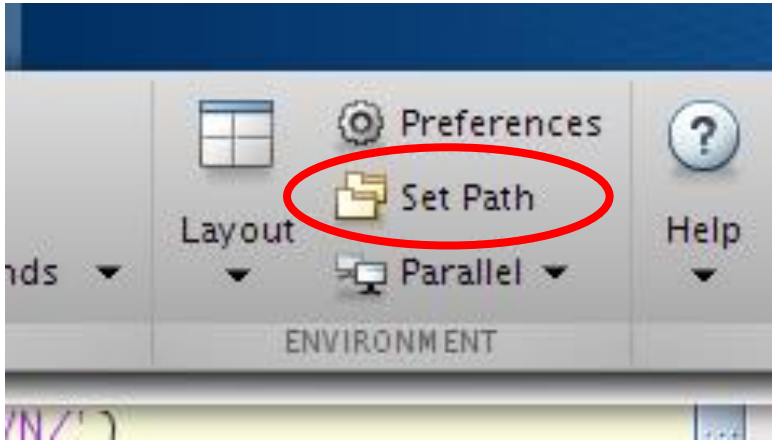
Set up FieldTrip

In Matlab terminal:

```
> addpath '~/mypath/fieldtrip'
> ft_defaults
> cd '/my_working_directory'
```

NB: If you have SPM as a default path, remove before setting up FieldTrip.

```
> restoredefaultpath
```



FieldTrip functions

```
data_out = ft_functionname(cfg)
data_out = ft_functionname(cfg, data_in)
```

”cfg” is configuration structure

```
cfg.key1 = value1
cfg.key2 = value2
```

…etc.

Tip: Start each new `cfg` by clearing previous

```
cfg = [];        %Reset cfg
```

Need more help?

Get documentation for functions for help, cfg options, etc, use the help function in MATLAB:

```
> help ft_functionname
```

Online tutorial, examples and documentation:
http://www.fieldtriptoolbox.org/

FieldTrip data structures (example)

```
data =
    hdr:            [1x1 struct]
    label:          {306x1 cell}
    time:           {1x600 cell}
    trial:          {1x600 cell}
    fsample:        200
    sampleinfo:     [600x2 double]
    trialinfo:      [600x3 double]
    grad:           [1x1 struct]
    elec:           [1x1 struct]
    cfg:            [1x1 struct]
```

Header info

Channel names

Time axis for each trial

***Trial data** [channels x timepoints]*

Sampling frequency (Hz)

[Start end] of each trial in raw data

Trial bookkeeping

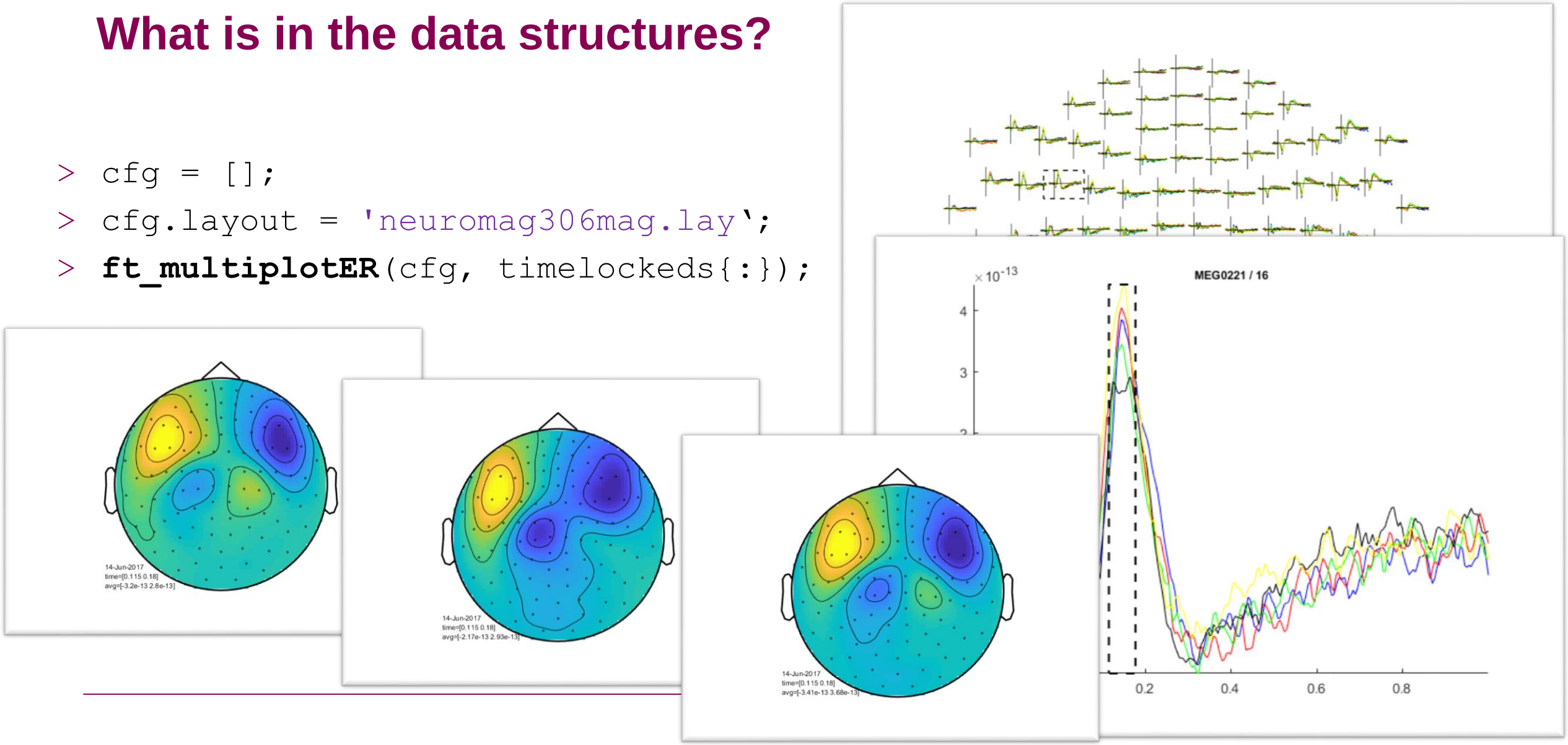
Gradiometer positions, etc

Electrode positions, etc

Previous configuration (for bookkeeping)

What is in the data structures?

```
> cfg = [];
> cfg.layout = 'neuromag306mag.lay';
> ft_multiplotER(cfg, timelockeds{:});
```



Summary

- `data_out = ft_functionname(cfg, data_in)`
- **`help`** `ft_functionname`
- Write variable name in terminal to see what it contain

megnord.org/2018/workshops.html