What are the weird spikes in the EEG? – is it ECG? When is this being introduced, in ECG removal, or is it already there? If so, it is a notch filter thing we can remove? Is it even a freqnency?

Why is ECG being marked as recordedinerror?

Would picard work better? QT5UPY

Confirm that the new SSS and old SSS files look the same.

Is interpolation of EEG the way to go, or should we just ignore them?

Save the figures. Work out when to ask questions of the user (EEG MEG mainline, bads, ICA components)

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<https://mne.tools/stable/overview/implementation.html#using-flash-images>

Use 3 layer BEM

What are projections - <https://mne.tools/stable/auto_tutorials/preprocessing/45_projectors_background.html#tut-projectors-background>

Source alignment: https://mne.tools/dev/auto\_tutorials/forward/20\_source\_alignment.html

Use –accurate in the forward model <https://mne.tools/stable/overview/implementation.html#minimum-norm-estimates>

READ ALL NME DOCUMENTATION

Surface is watershead/freesurfer/MPRAGE (from XXX) other 2 from are flash

Watershead:

Flash:

https://mne.tools/dev/overview/implementation.html

Inner two for Flash

Outer one T1

*# Convert each echo into mgz files for flash5 and flash30 sequences*

mri\_convert your\_nifti\_file\_name\_megre5\_echoX.nii.gz megre5\_X.mgz

*# Average echos and store the average files into mri/flash/parameter\_maps folder of your freesurfer directory of the subject*

mri\_average -noconform megre5\_1.mgz megre5\_2.mgz megre5\_3.mgz megre5\_4.mgz megre5\_5.mgz megre5\_6.mgz megre5\_7.mgz megre5\_8.mgz ${SUBJECTS\_DIR}/${SUBJECT}/mri/flash/parameter\_maps/flash5.mgz

mri\_average -noconform megre30\_1.mgz megre30\_2.mgz megre30\_3.mgz megre30\_4.mgz megre30\_5.mgz megre30\_6.mgz megre30\_7.mgz megre30\_8.mgz ${SUBJECTS\_DIR}/${SUBJECT}/mri/flash/parameter\_maps/flash30.mgz

*# In python terminal, make the BEM models*

**from** mne.bem **import** make\_flash\_bem

subject = "XZJ7KI"

subjects\_dir = "your\_freesurfer\_directory"

make\_flash\_bem(subject, overwrite=False, show=True, subjects\_dir=subjects\_dir,

flash\_path=None, copy=True, verbose=None)

MRI slice overlay

*Improvements…?*

* Reduce noise in different ways
  + Do with ‘ICA’ blinks
  + Does ECG python removal help?
  + For each trial, bad those channels that are above 150/200, if EEG & less than 5 – \*Don’t drop\*
  + Interpolation
  + Only do ICA on those above 150/200, if eeg & less than 5.
  + Use AAR component seperation

**Source Improvements**

* Added support for automated SNR estimation?
* New apply inverse options:
  + RANK
  + Add patch statistics for use with depth
  + Limit depth\_chs
* -csd (improvement?)
* Diag
* *Cov+gcov = “baseline”- preexperiment - > empty-room MEG, and diag EEG – not stimulus*
* Add SSP
* Depth – it is still not clear to me what this really is – Should it be 0.5? How can we work out what it should be?