

به نام خدا

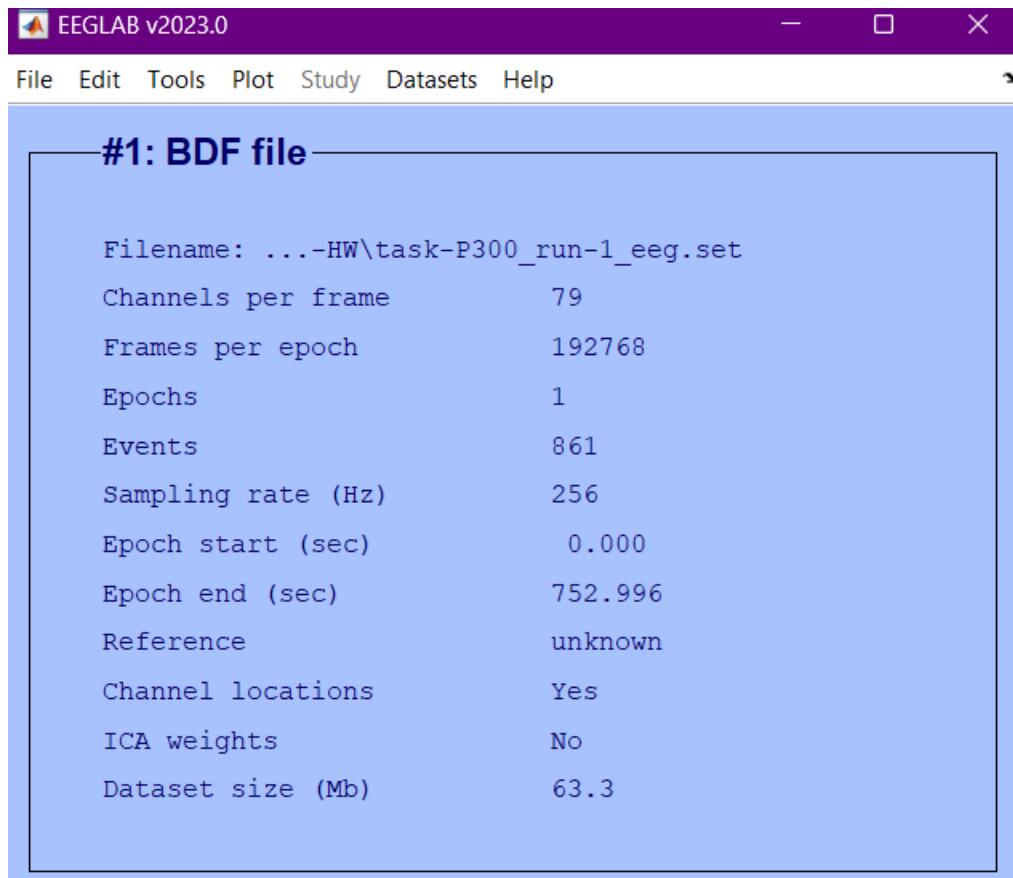
تمرین چهارم آز علوم اعصاب

مهدی صیامی

98104274

A)

1)

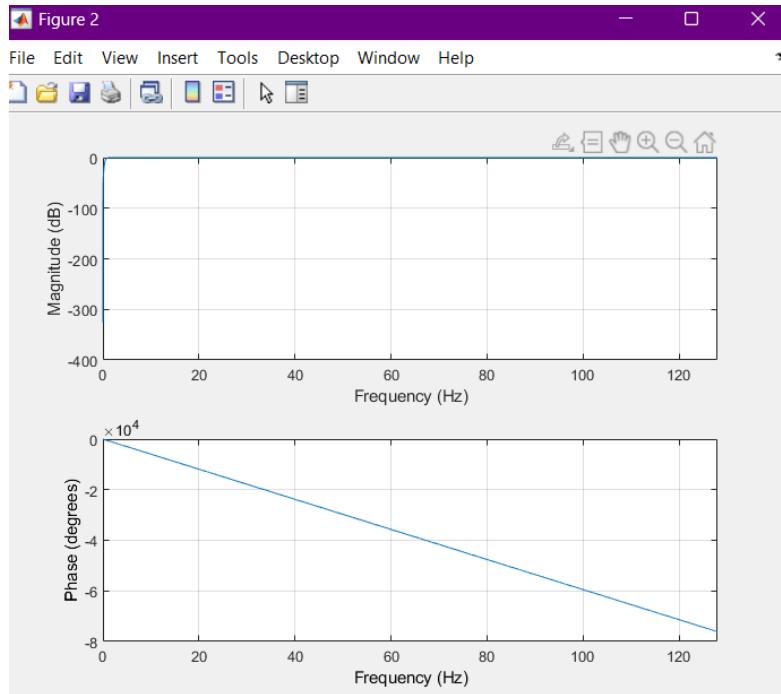


The image shows a screenshot of the EEGLAB v2023.0 software interface. The window title is "EEGLAB v2023.0". The menu bar includes "File", "Edit", "Tools", "Plot", "Study", "Datasets", and "Help". The main content area displays a summary of a BDF file, titled "#1: BDF file". The summary lists the following parameters:

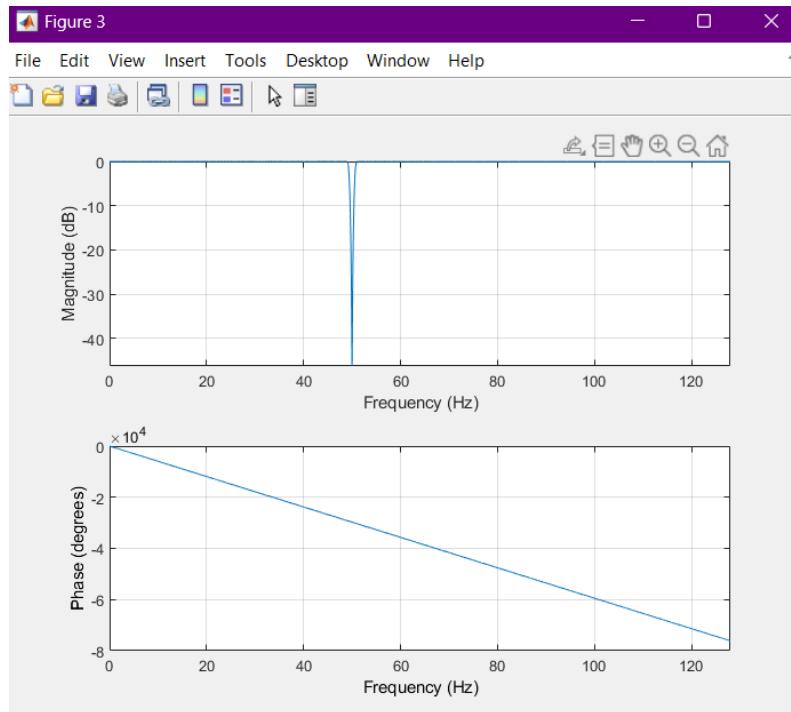
| #1: BDF file | |
|--------------------|--------------------------------|
| Filename: | ...-HW\task-P300_run-1_eeg.set |
| Channels per frame | 79 |
| Frames per epoch | 192768 |
| Epochs | 1 |
| Events | 861 |
| Sampling rate (Hz) | 256 |
| Epoch start (sec) | 0.000 |
| Epoch end (sec) | 752.996 |
| Reference | unknown |
| Channel locations | Yes |
| ICA weights | No |
| Dataset size (Mb) | 63.3 |

2,3)

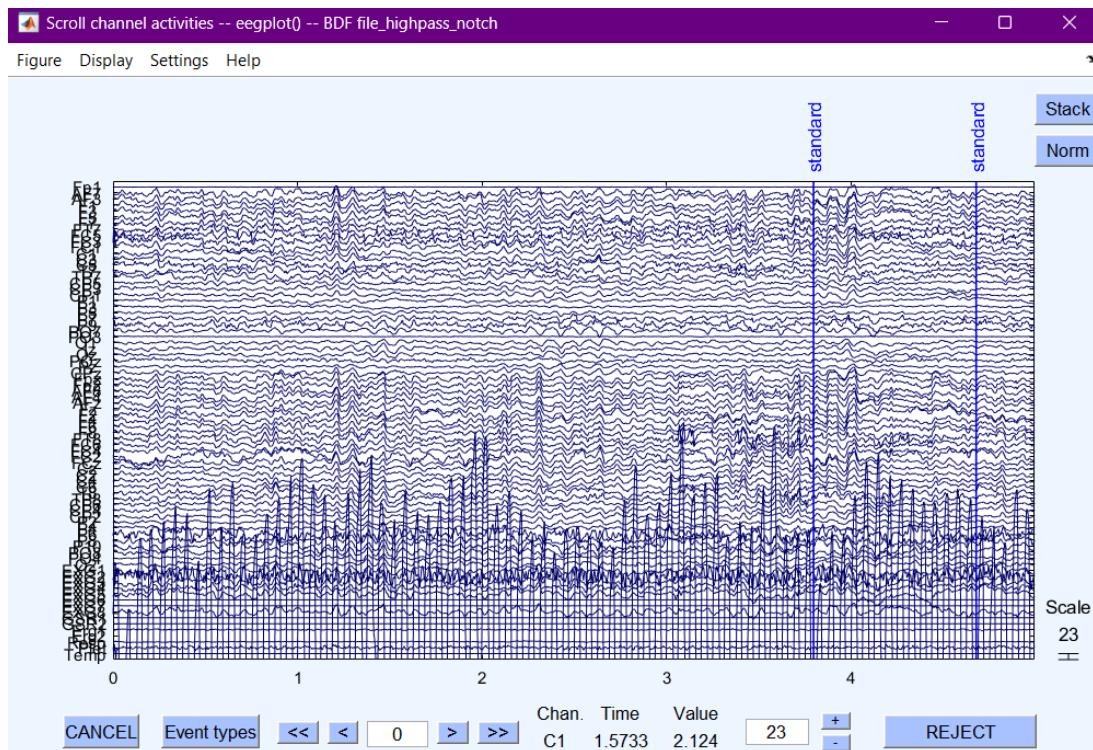
High pass filter



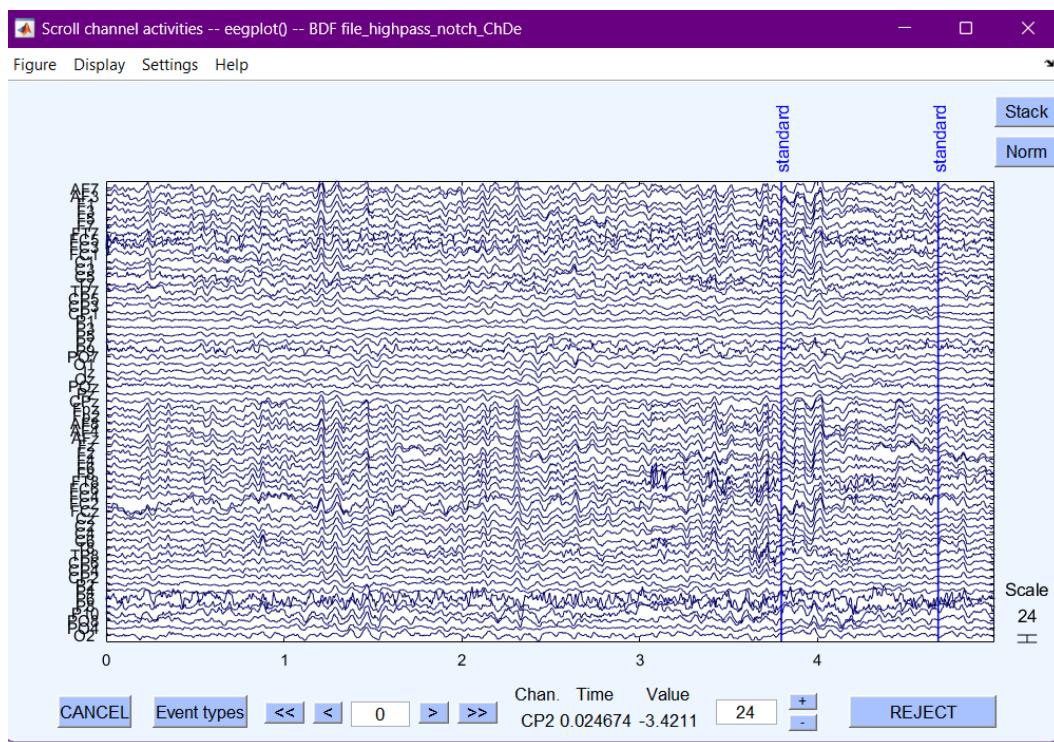
Line noise removal (50 Hz notch from 49 to 51)



Data

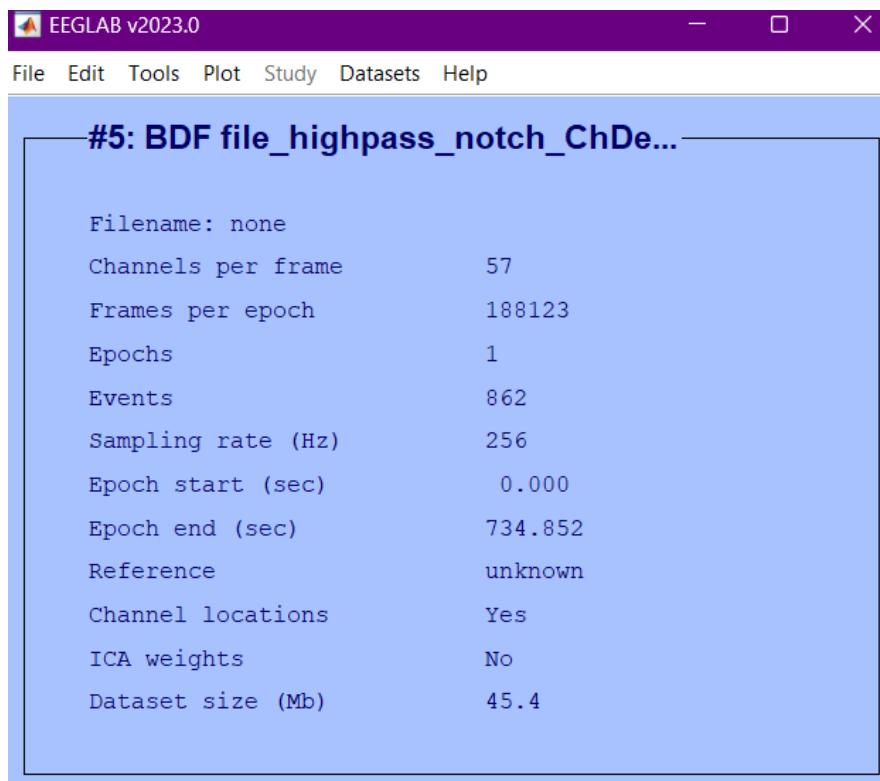
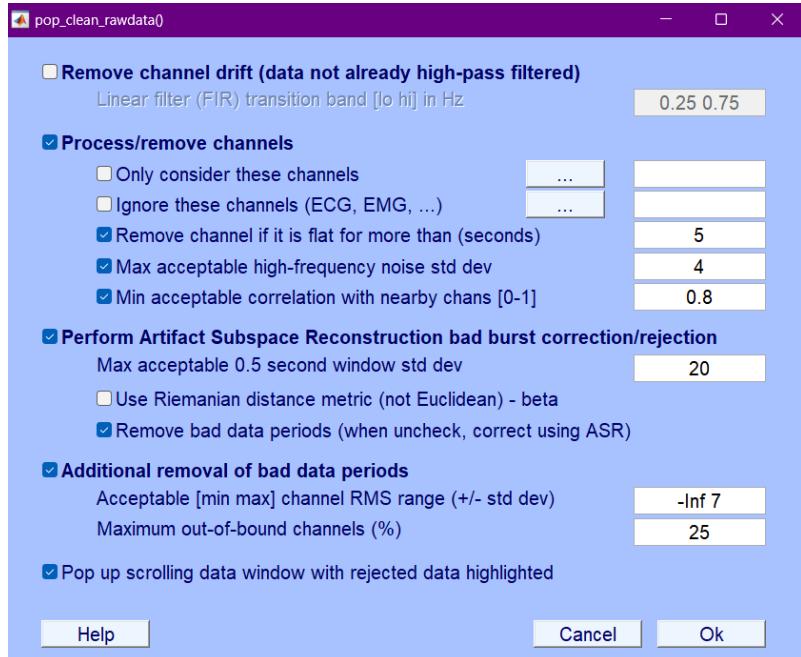


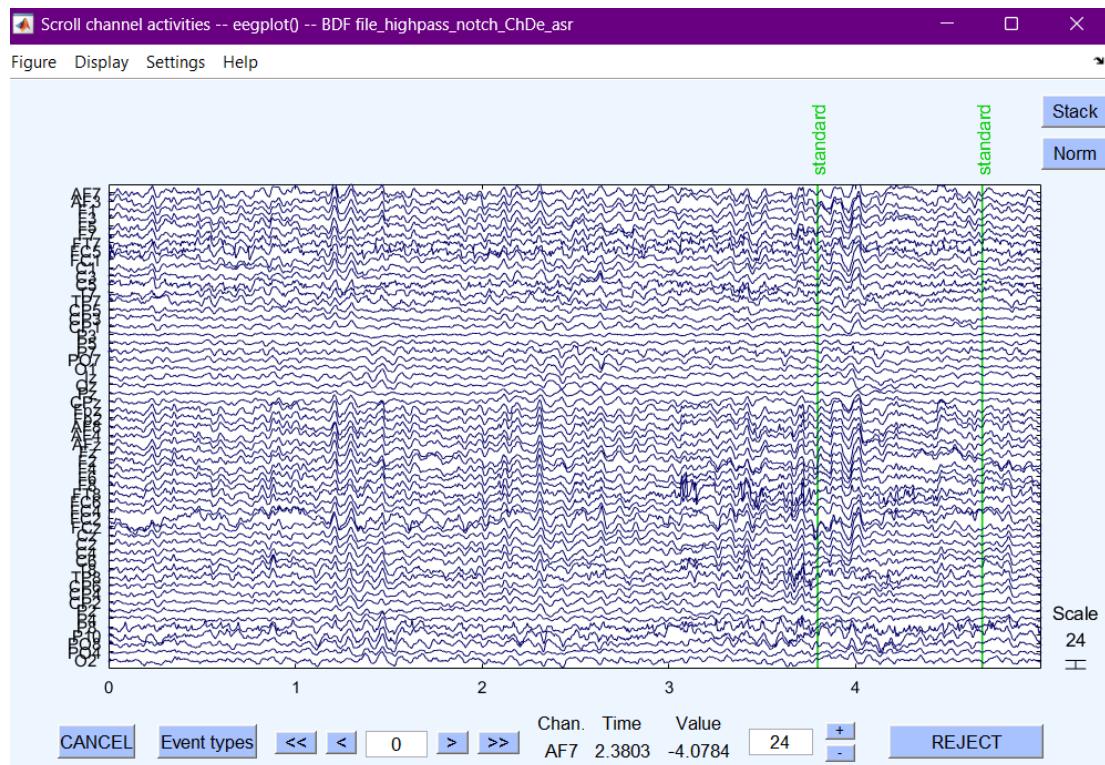
After removing Fp1, Po3 and 65 to 79 channels:



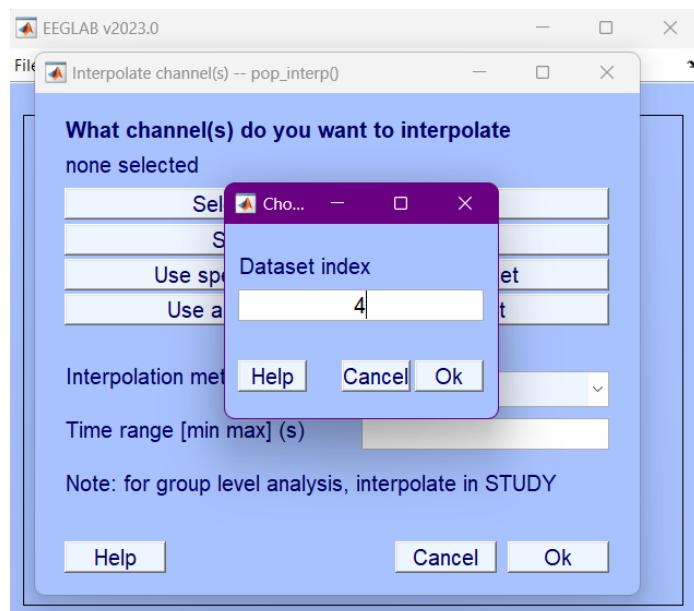
4)

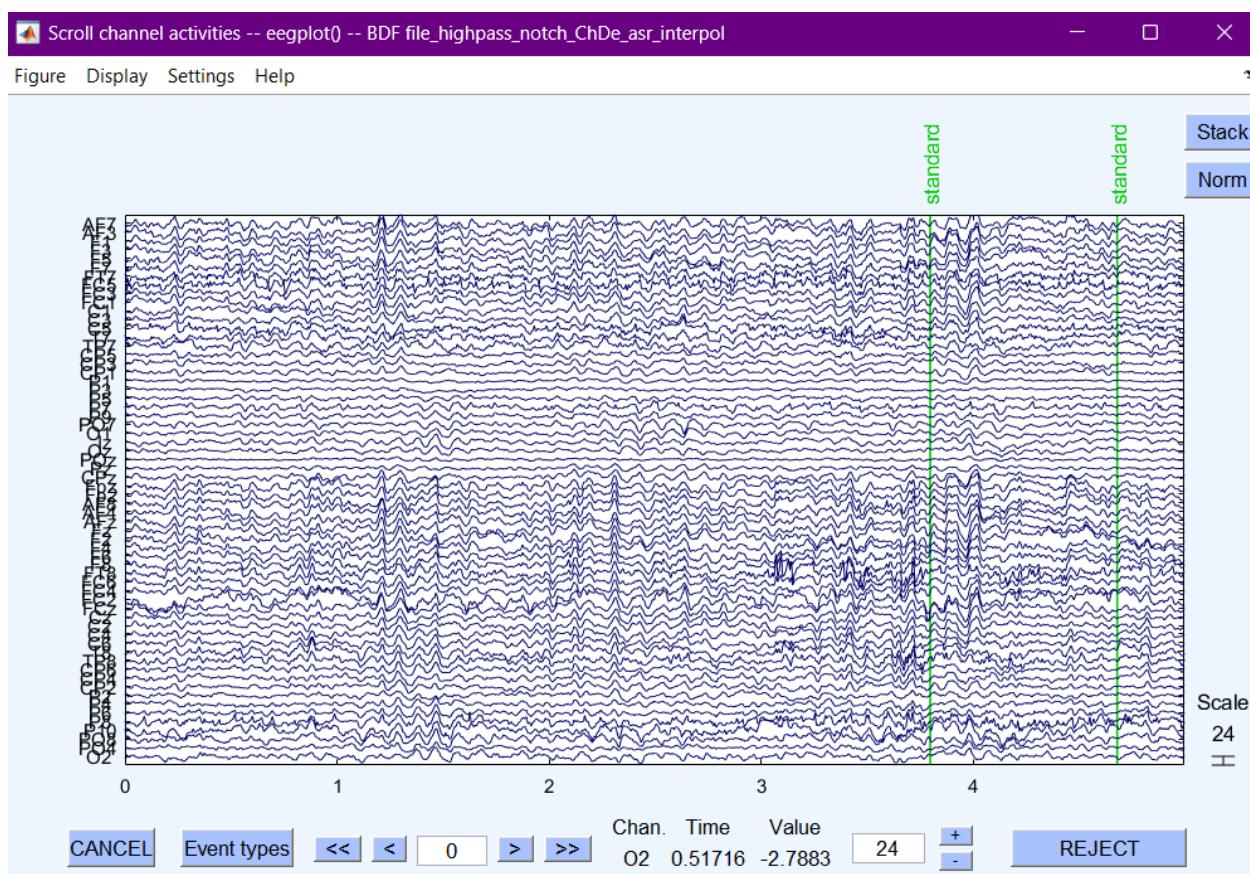
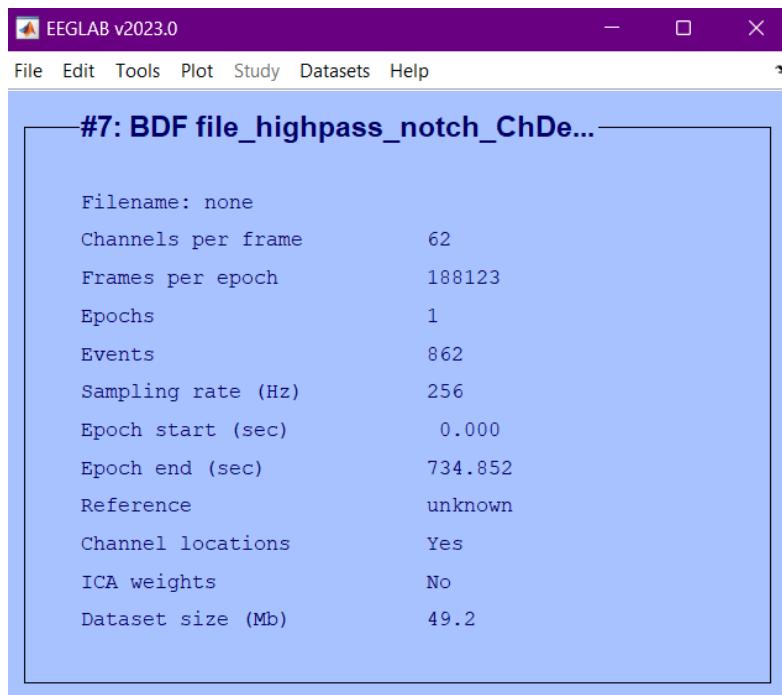
ASR rejection



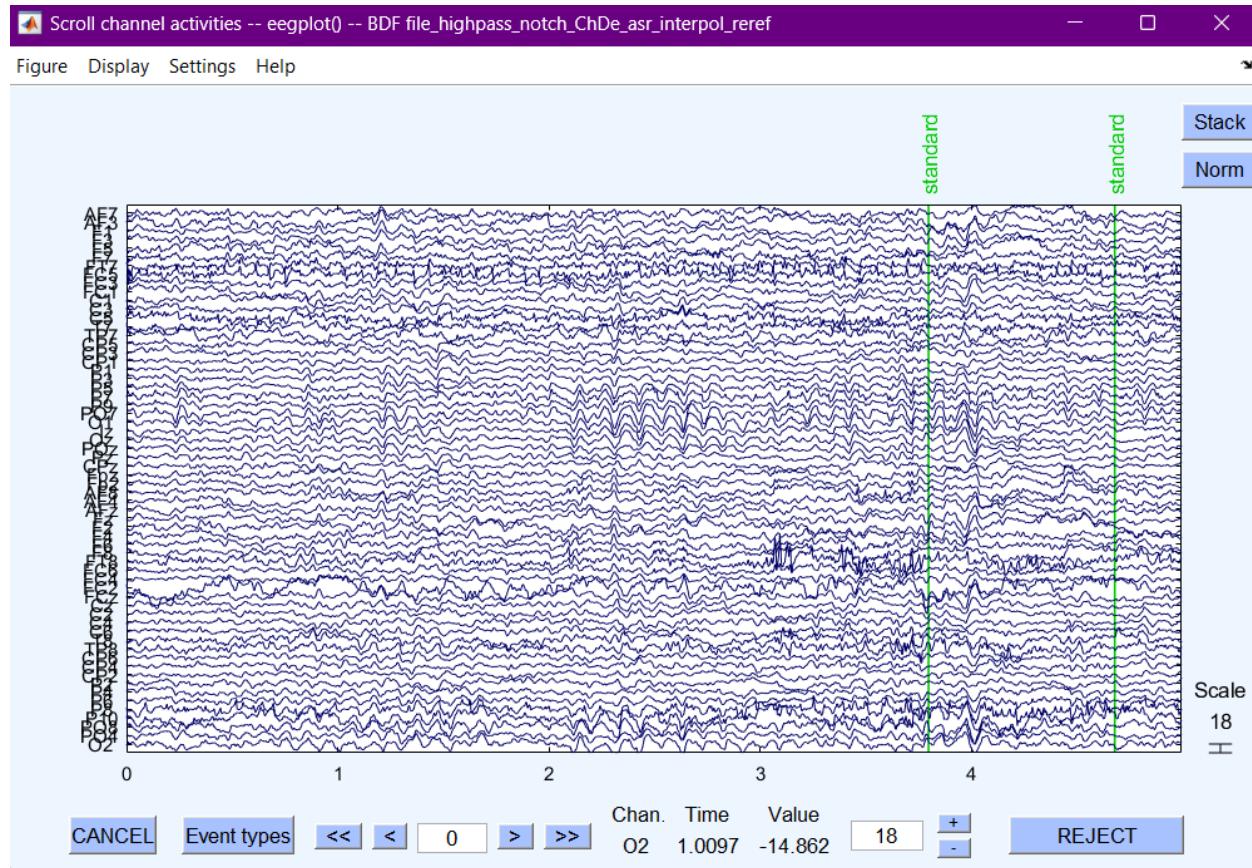


Interpolation

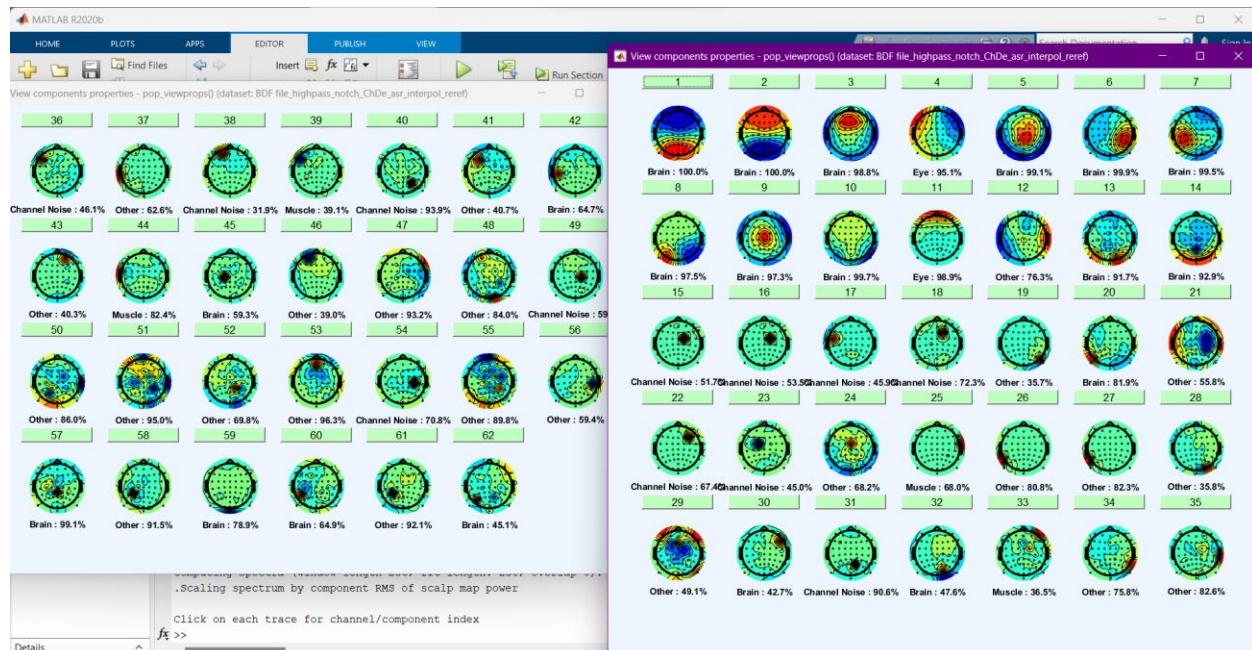




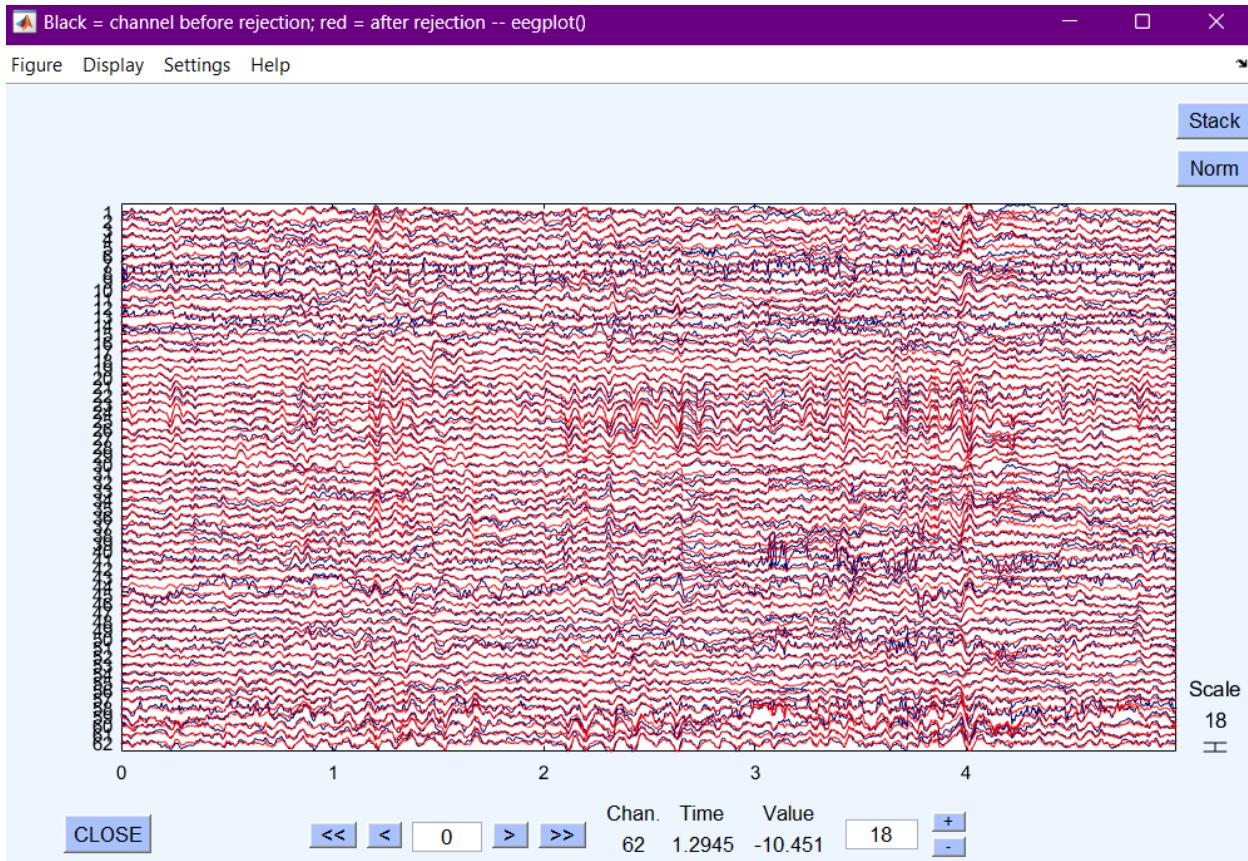
5)



6)



IC1,IC2,IC3,IC5,IC6,IC7,IC8,IC9,IC10,IC13,IC14,IC57

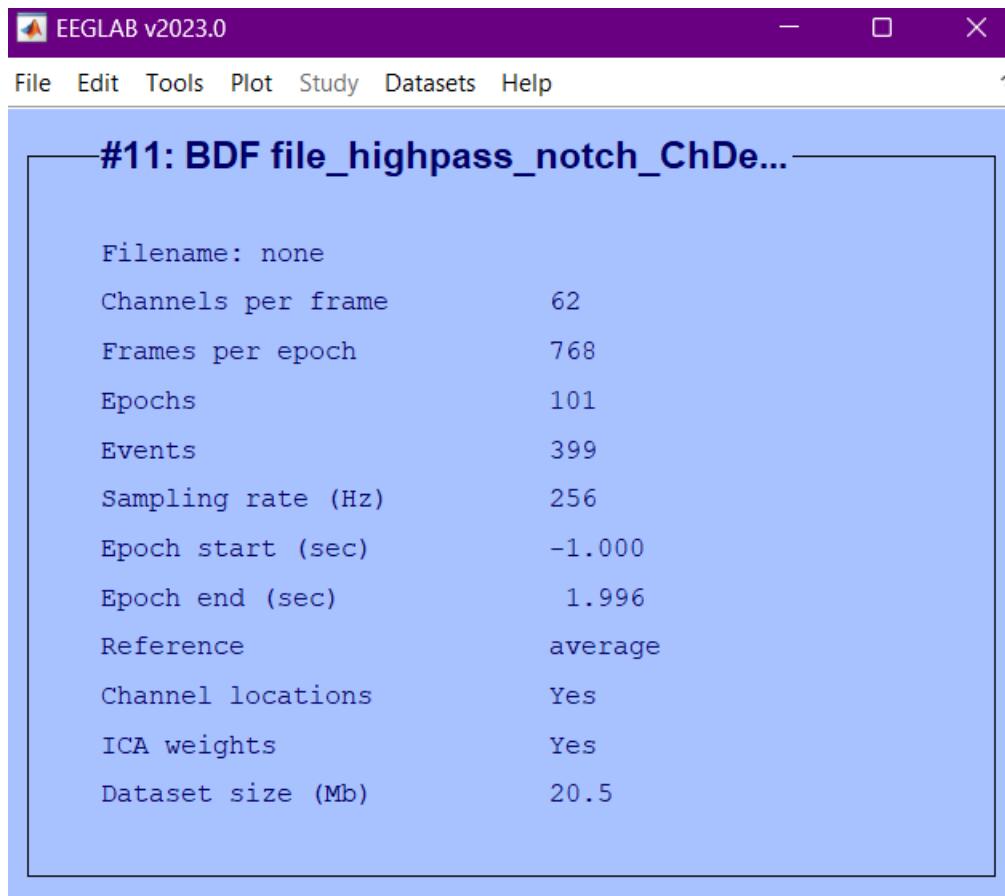


7)

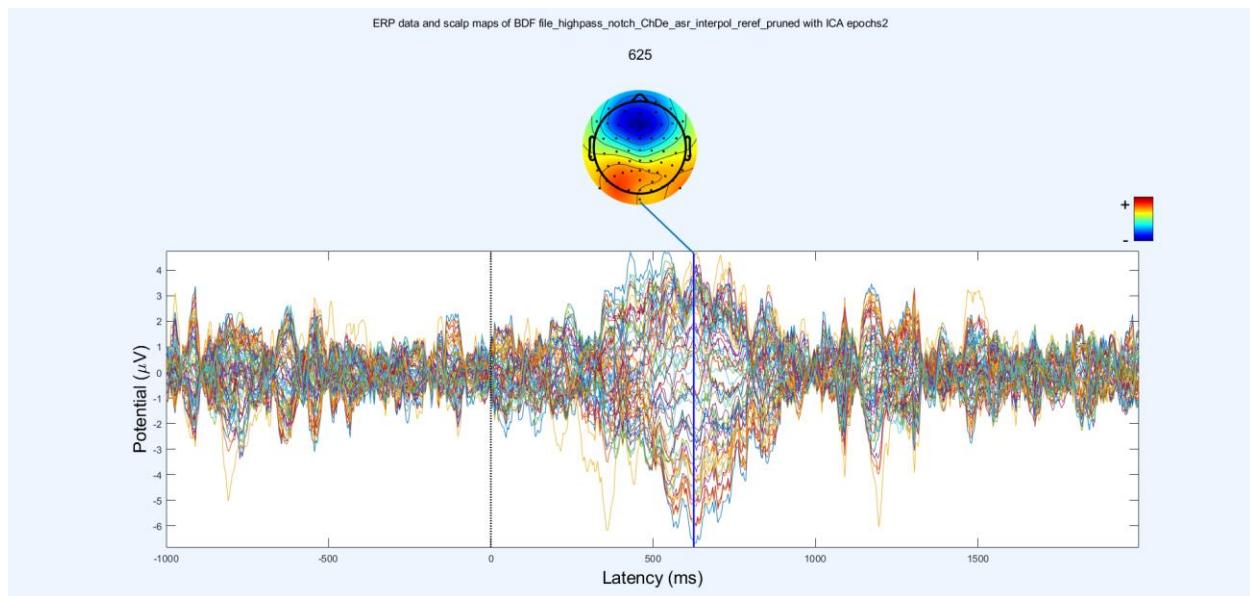
This dialog box is titled "Extract data epochs - pop_epoch0". It contains the following fields:

- Time-locking event type(s) ([]=all): oddball_with_response
- Epoch limits [start, end] in seconds: -1 2
- Name for the new dataset: pop_reref_pruned with ICA epochs
- Out-of-bounds EEG limits if any [min max]: (empty field)

At the bottom are "Help", "Cancel", and "Ok" buttons.



8)



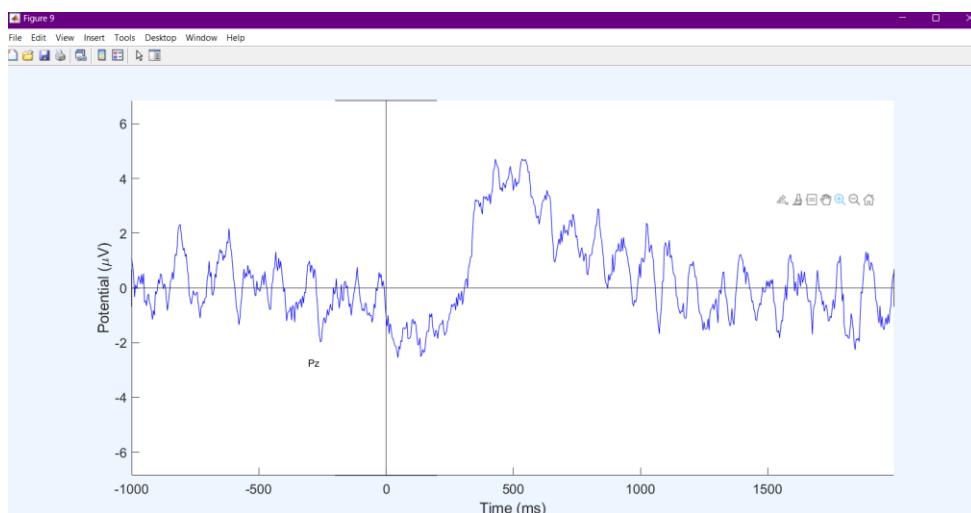
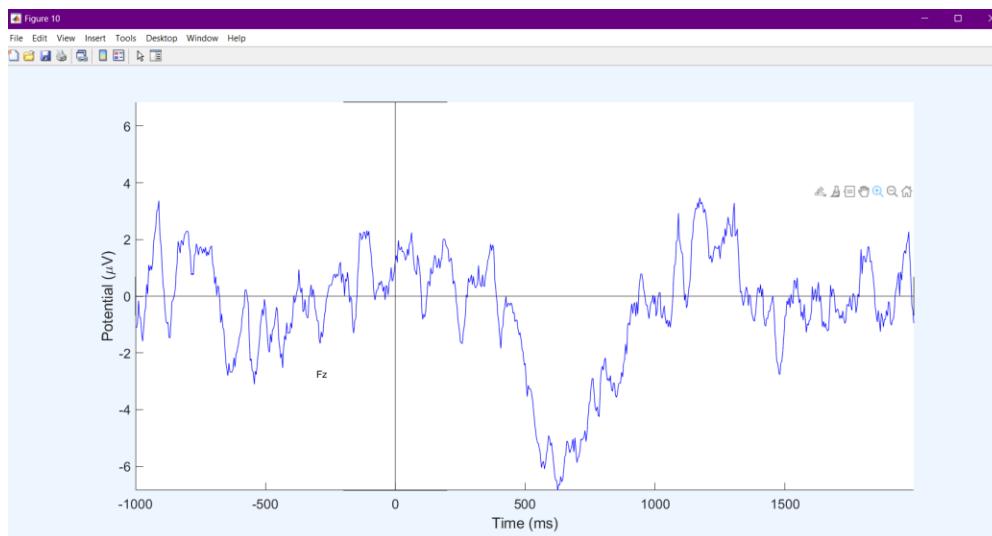
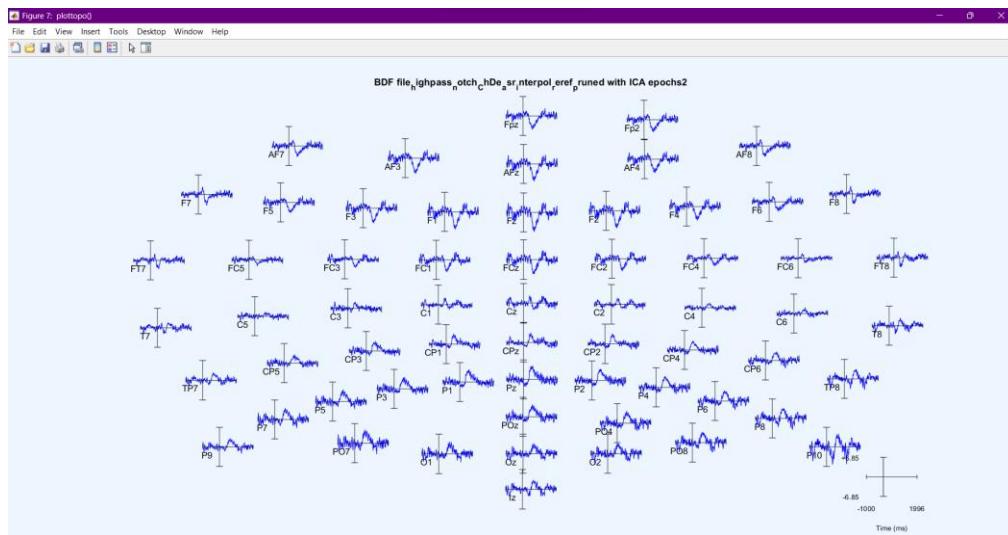
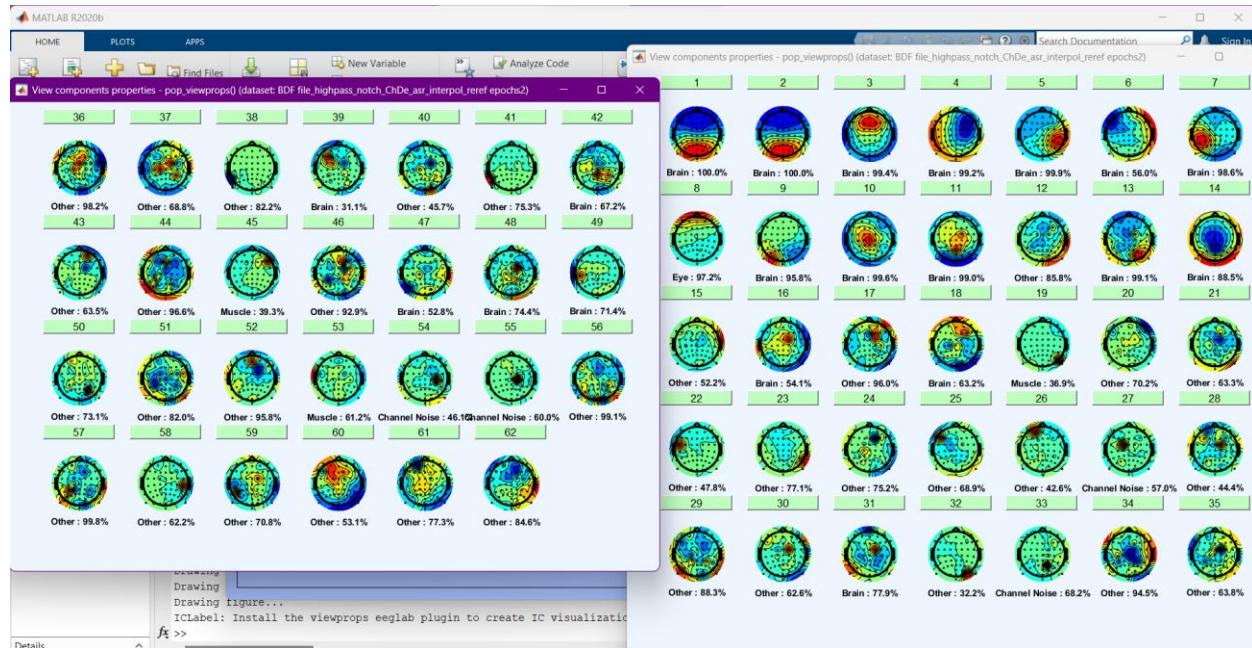


Fig 10 : Fz has the largest P-300 amplitude.

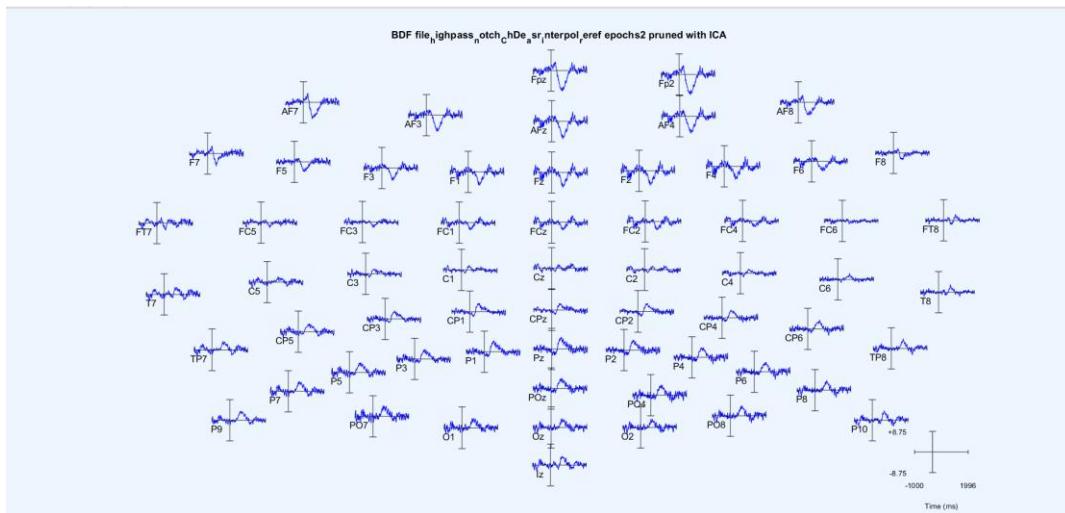
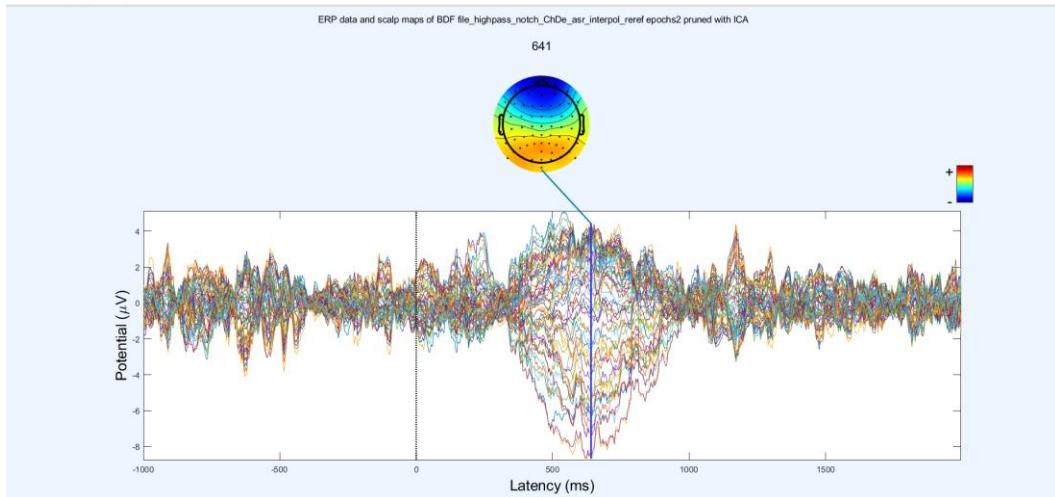
fig9 : Pz

B)

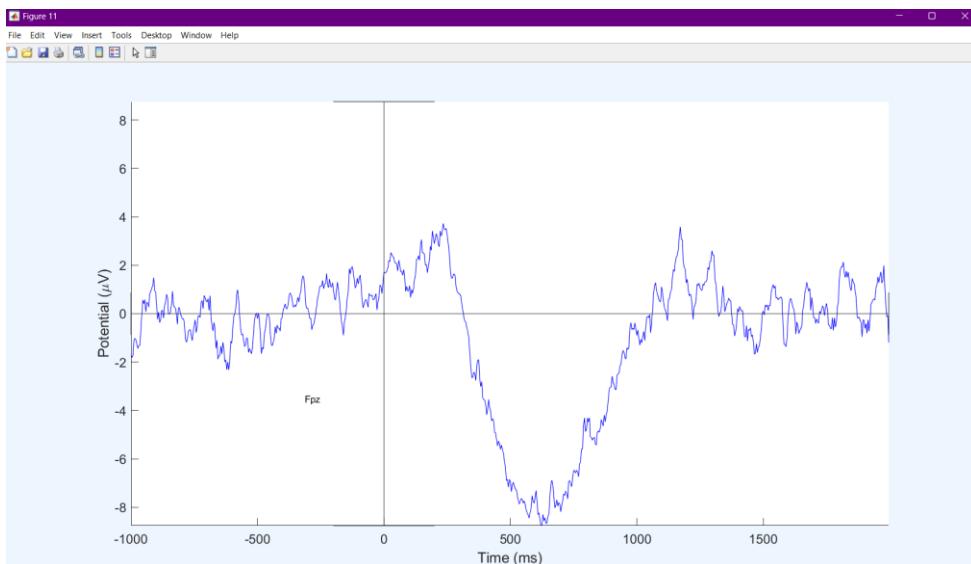


IC1,IC2,IC3,IC4,IC5,IC7,IC8,IC9,IC10,IC13,IC14,IC11

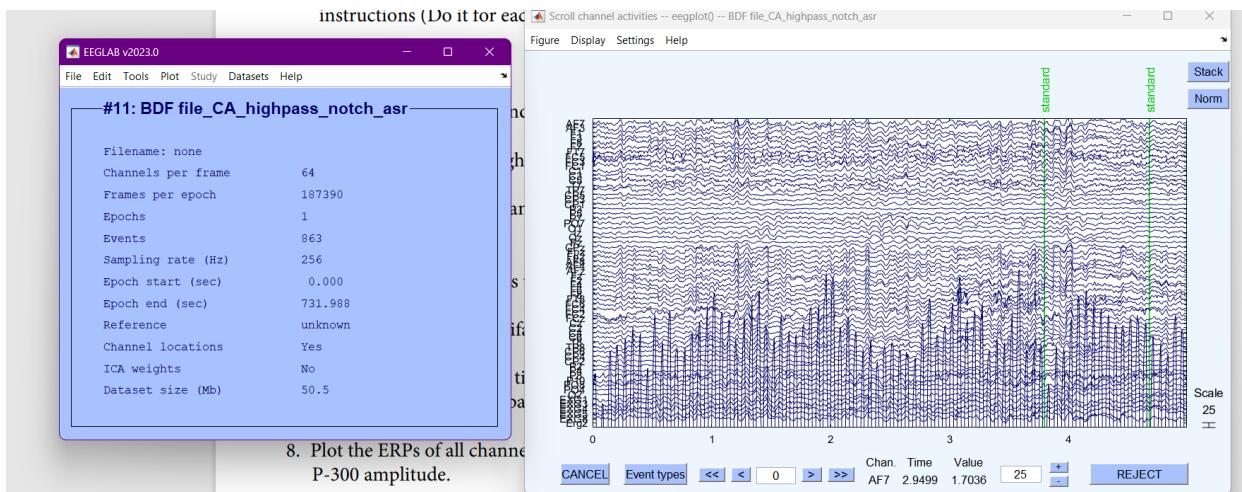




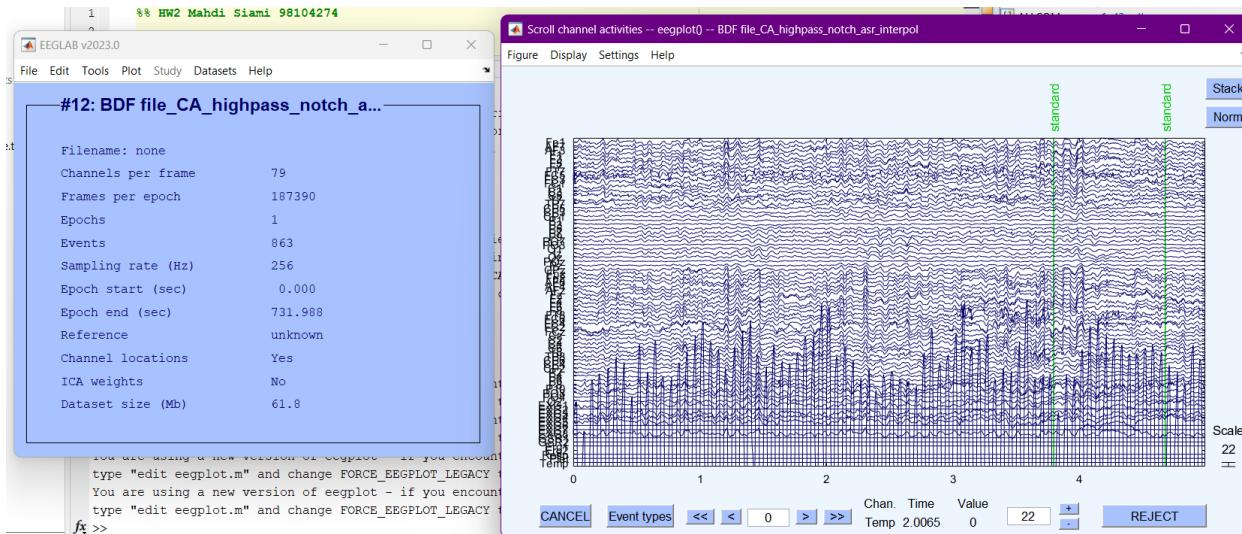
Fpz has the largest P-300 amplitude.



CA4)



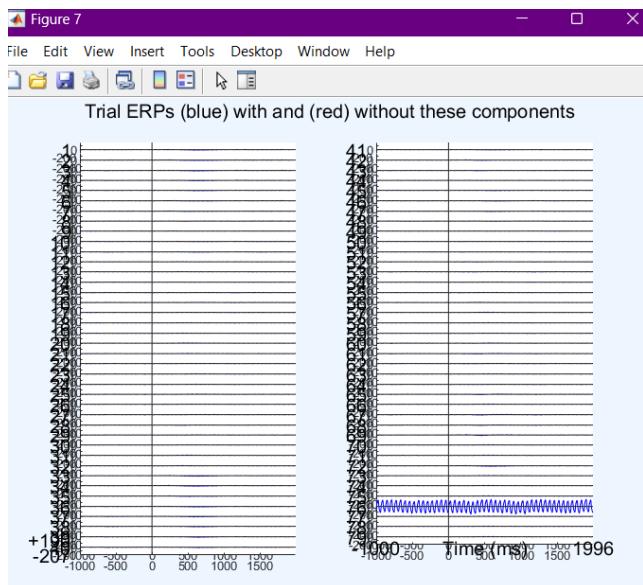
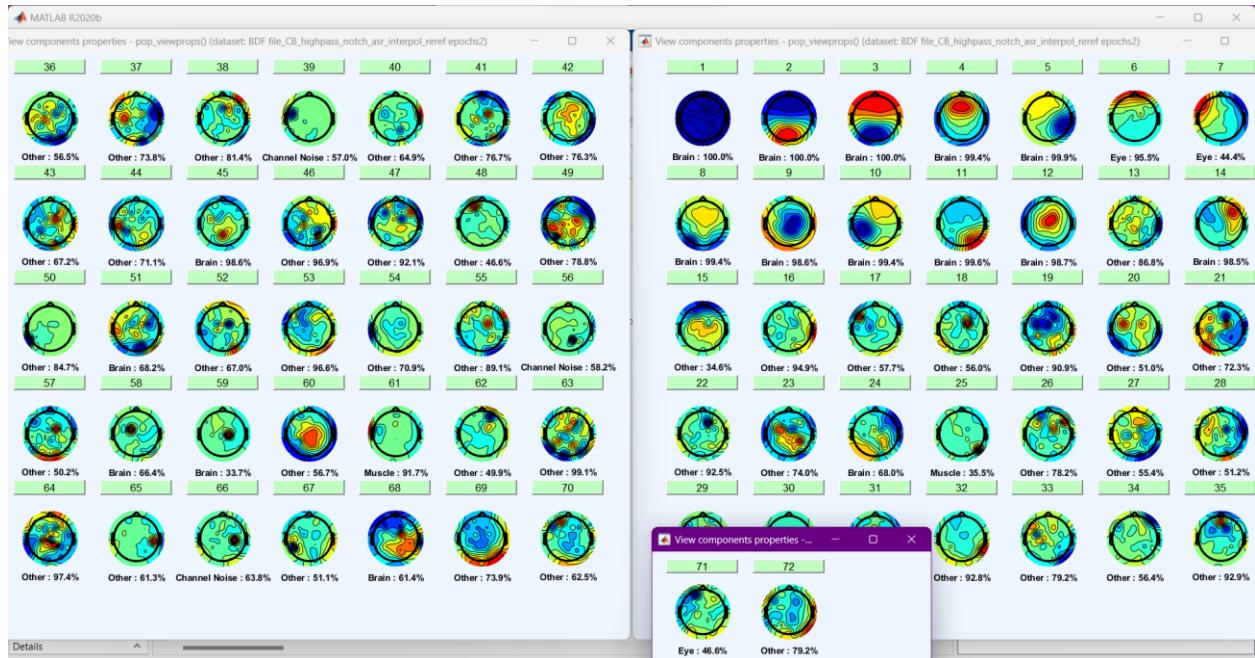
8. Plot the ERPs of all channels
P-300 amplitude.

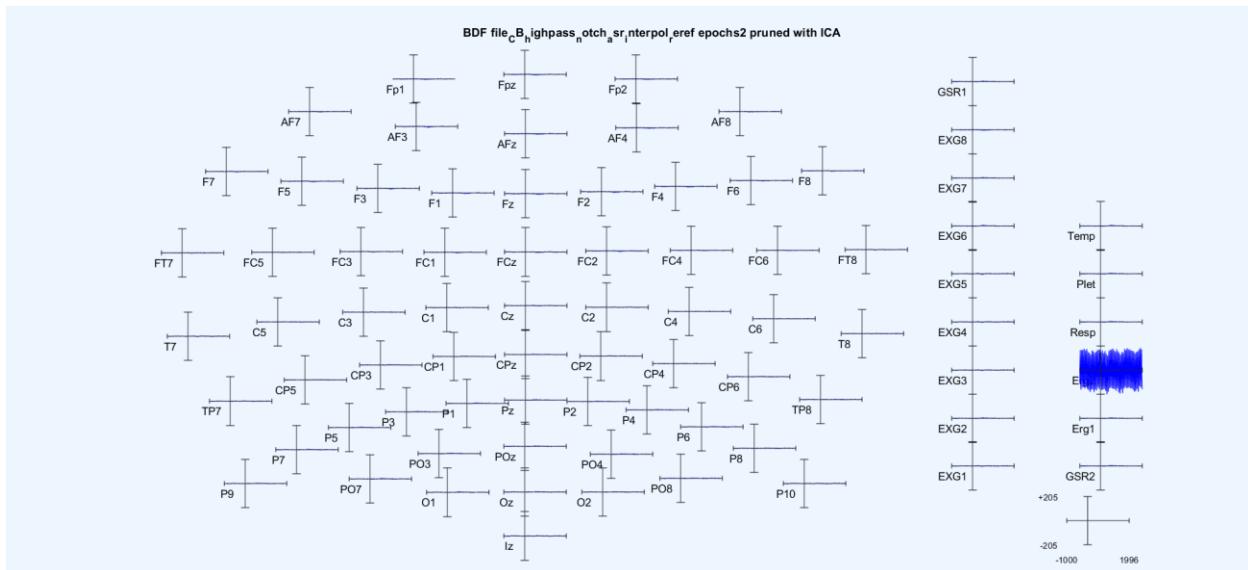
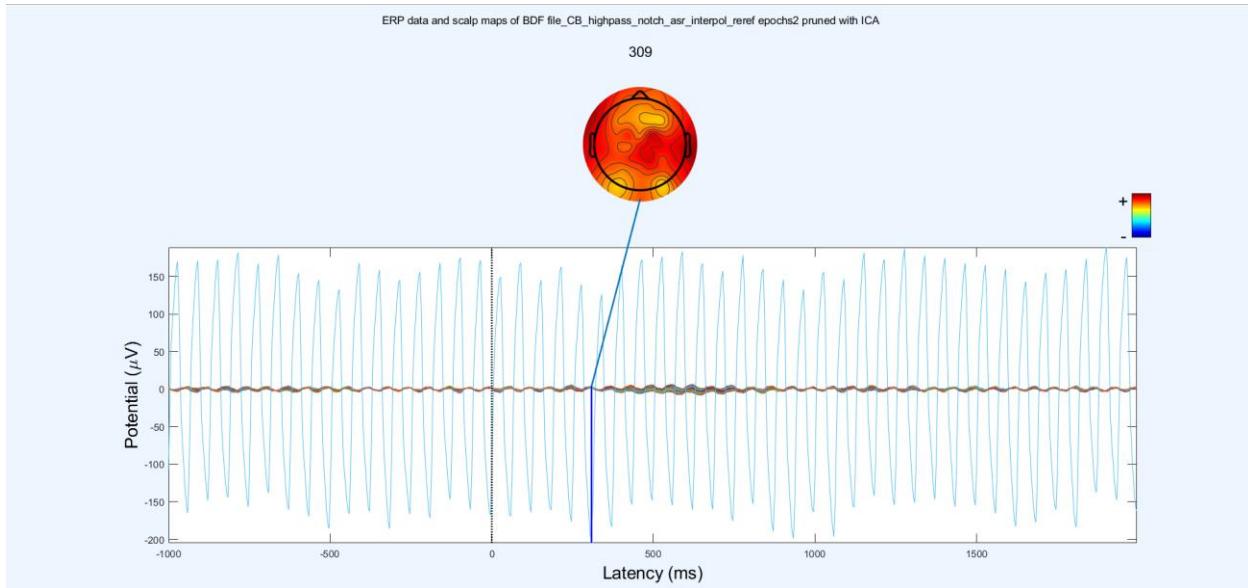


CA 6→8)

چون ICA خیلی طول کشید و انجام نشد این قسمت ها انجام نمیشوند.

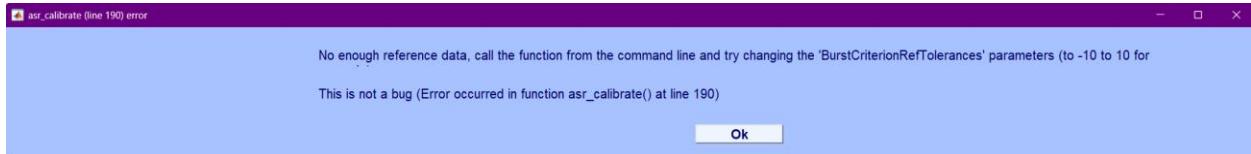
CB 5)





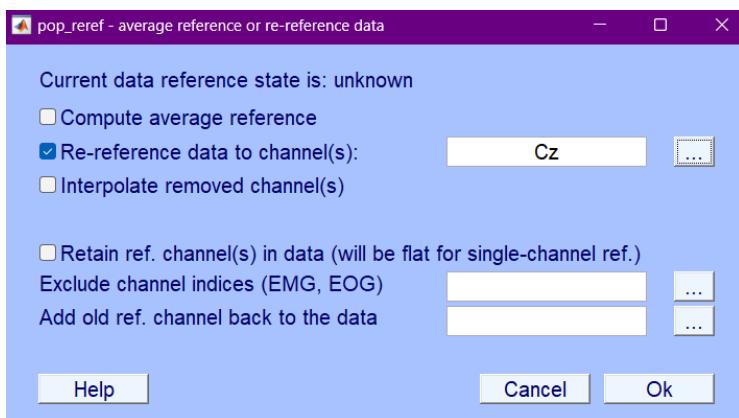
همانطور که میبینید نتایج در این قسمت اصلا مناسب نیستند و p300 ها به درستی قابل مقایسه نیستند.

D)



چون ارور میدهد قابل انجام نیست.

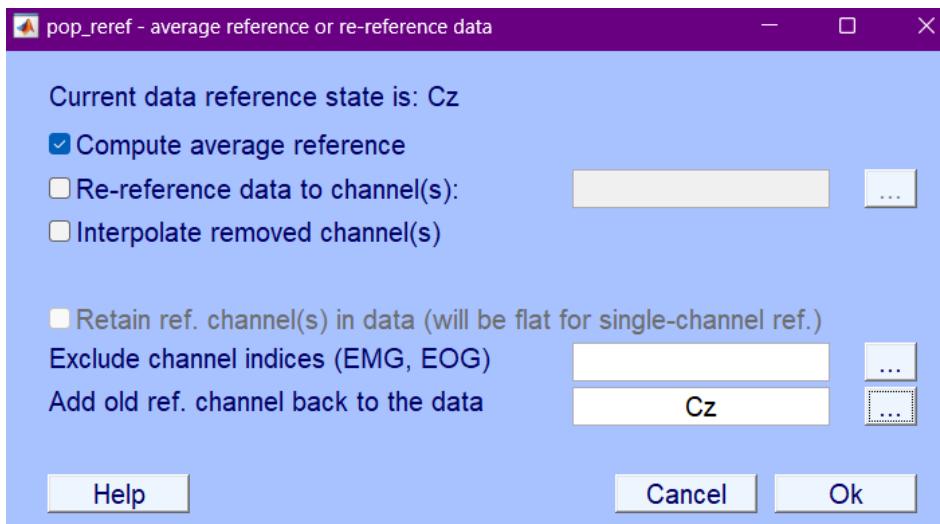
E)



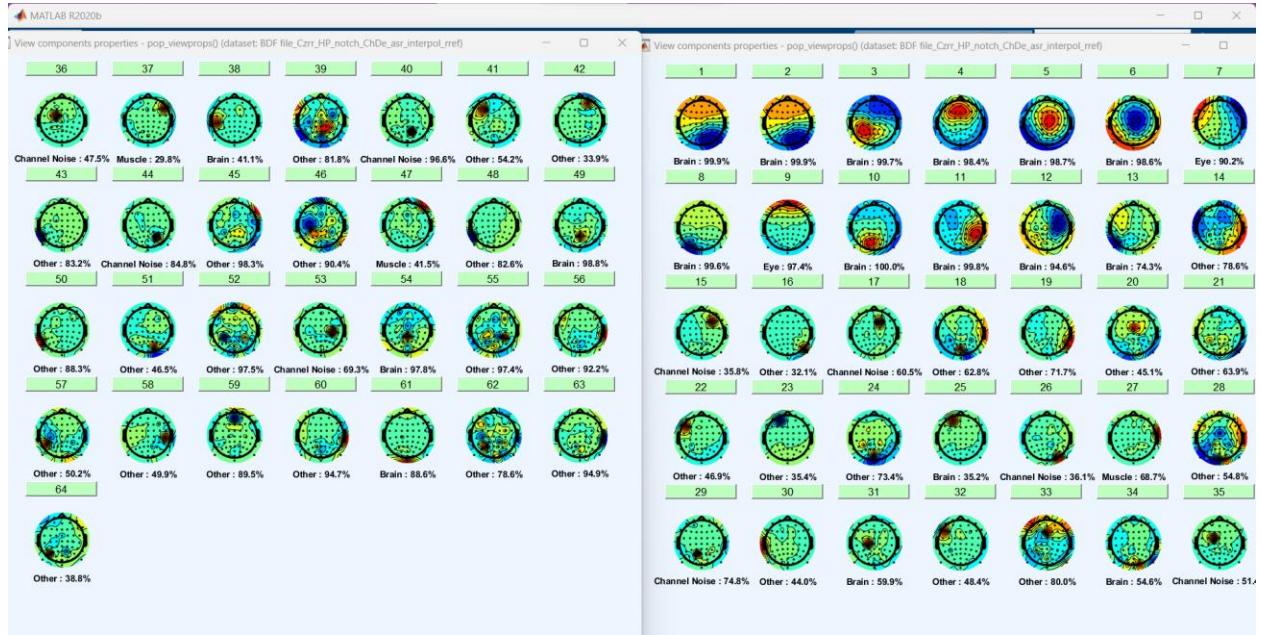
A4)

Deleted channels: Cz EXG1 EXG2 EXG3 EXG4 EXG5 EXG6 EXG7 EXG8 GSR1 GSR2
Erg1 Erg2 Resp Plet Temp

A5)

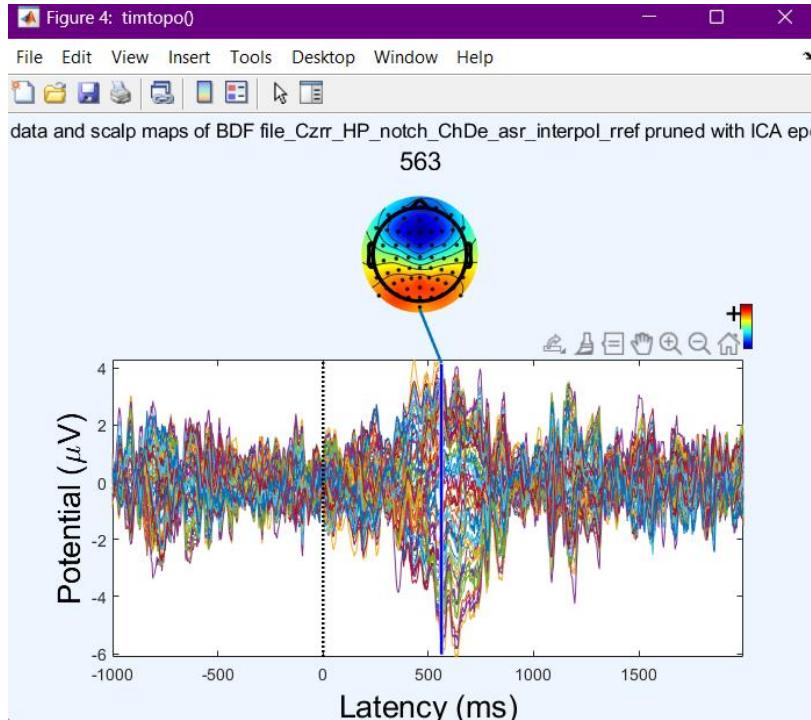


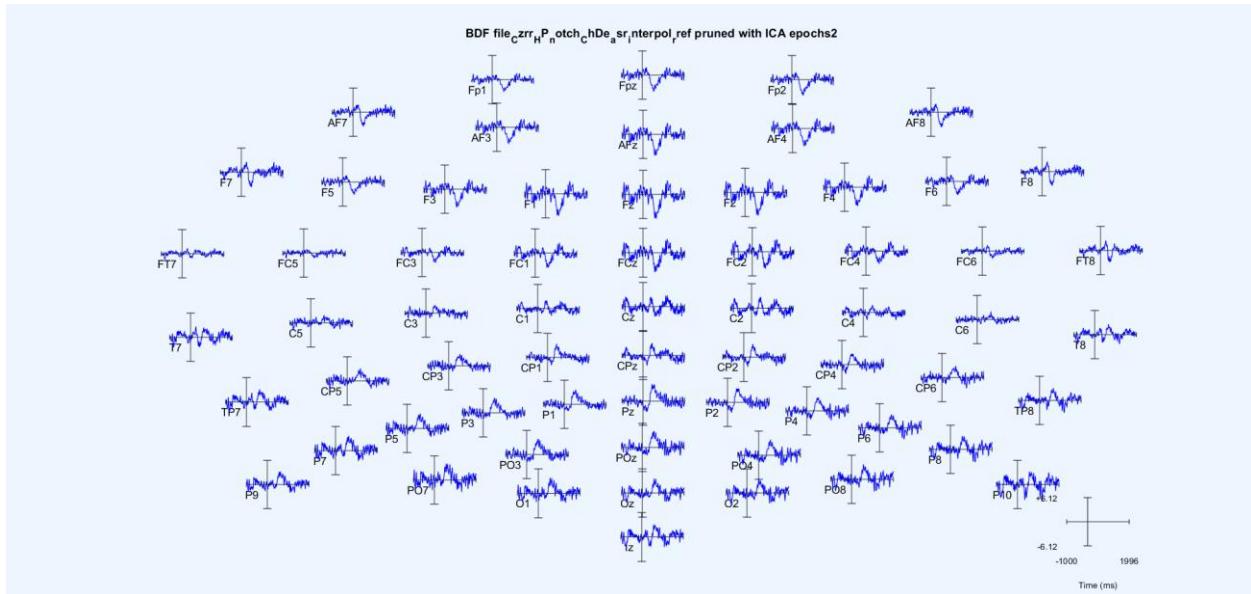
A6)



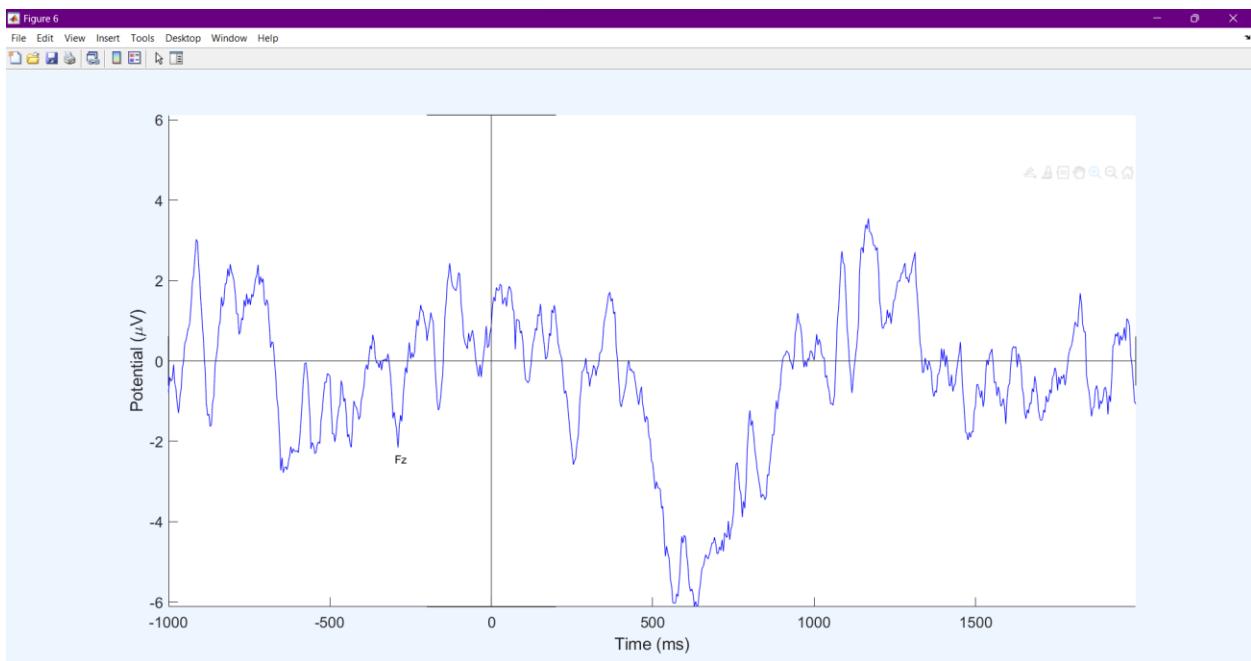
Staying channels: 1,2,3,4,5,6,8,10,11,12,49,54

A7)

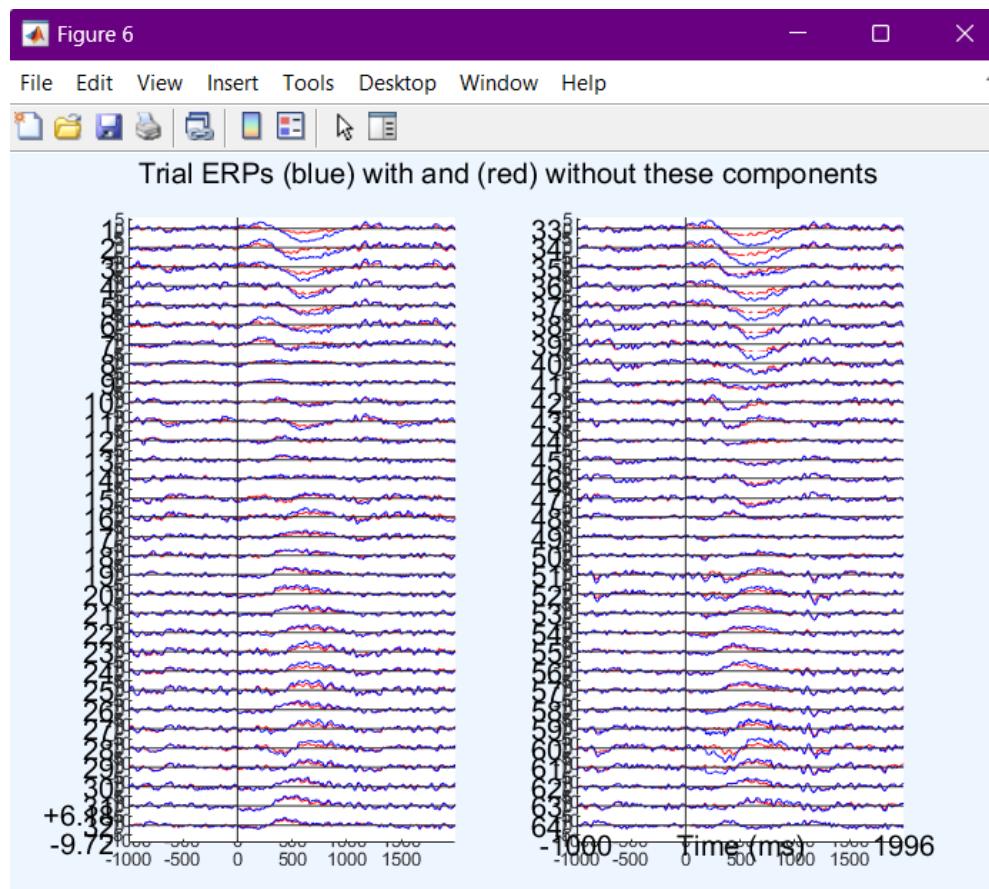
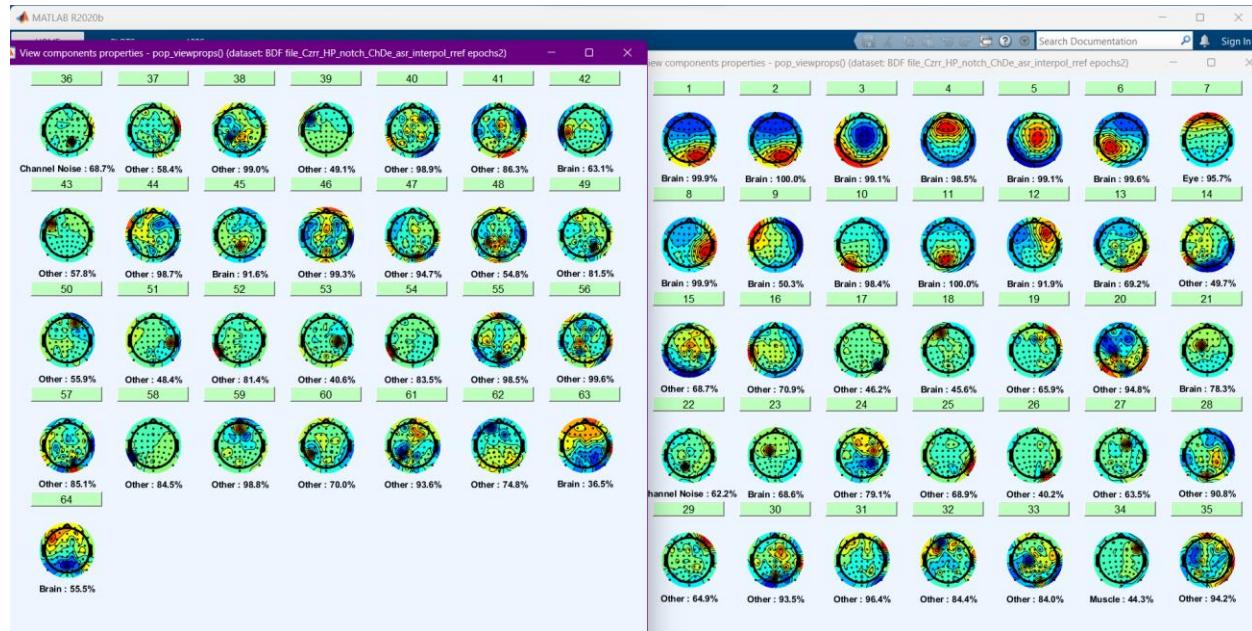




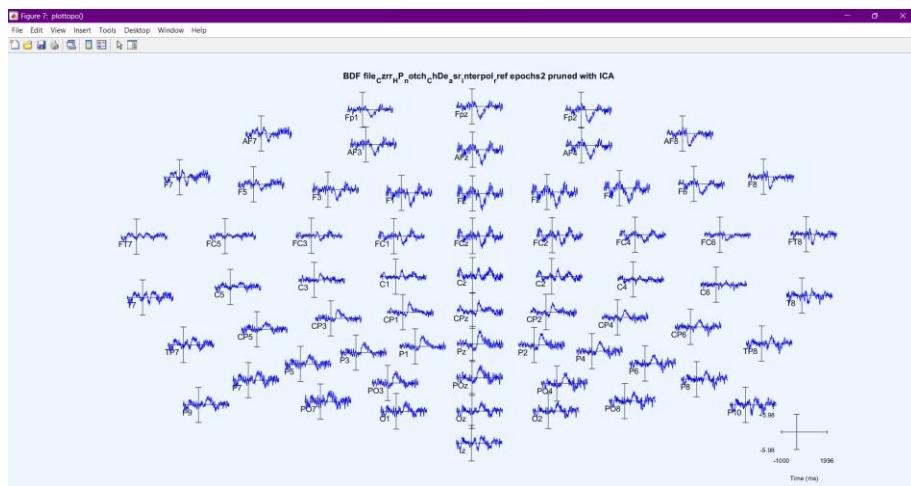
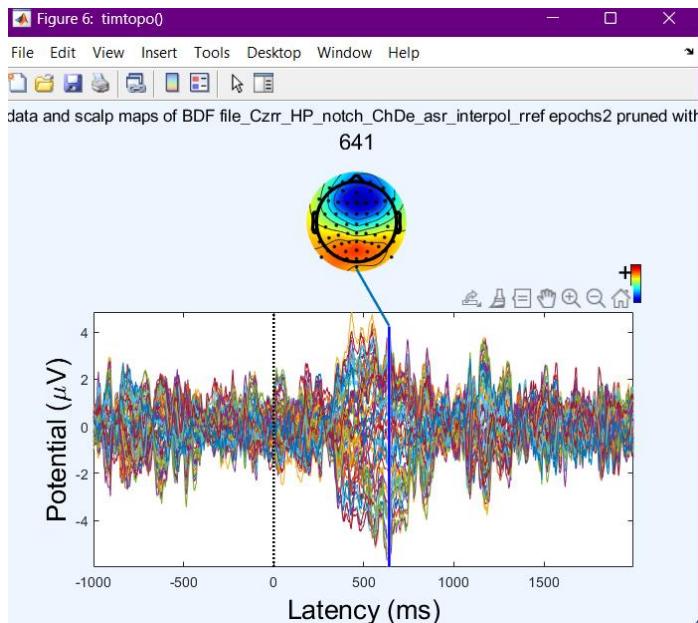
Fz has the largest P-300 amplitude.



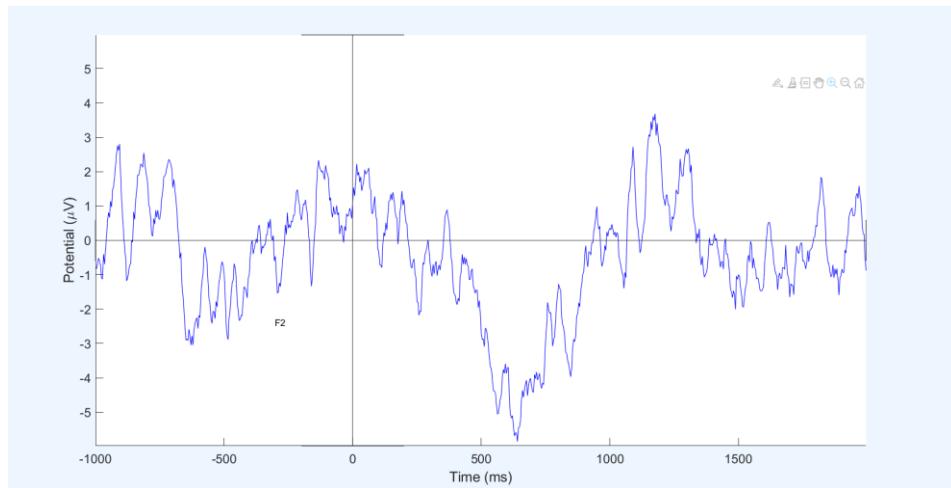
B)



Stayed: 1,2,3,4,5,6,8,9,10,11,12,45



Fz has the largest P-300 amplitude.

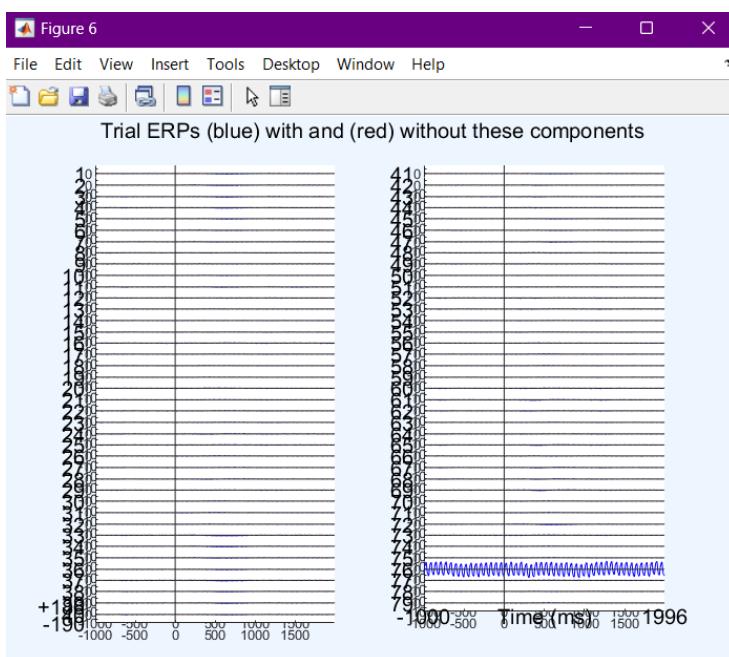
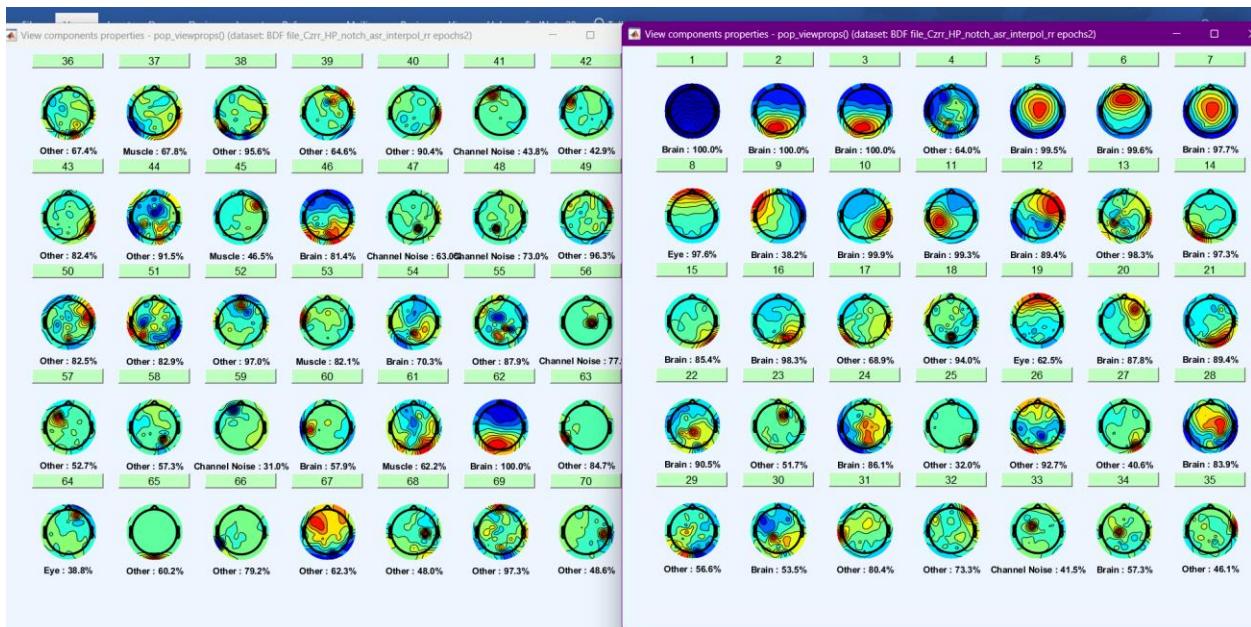


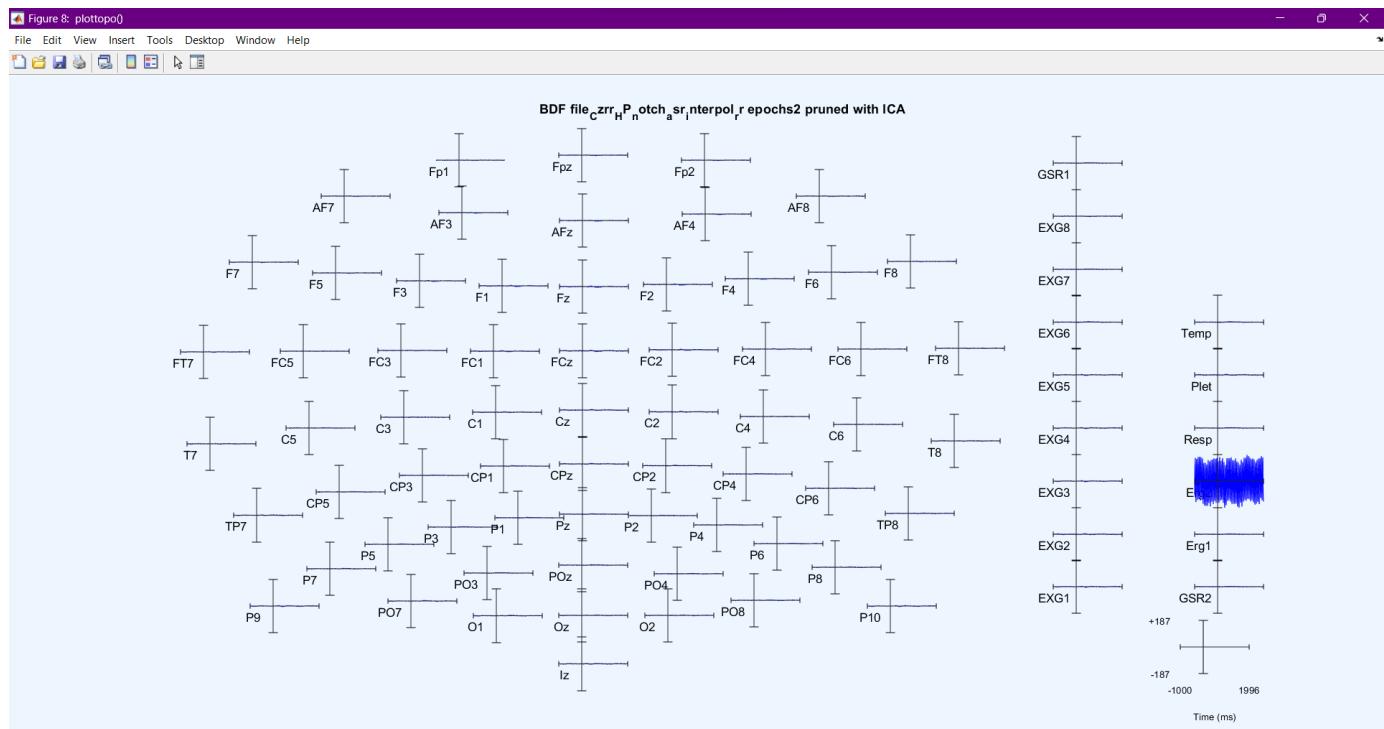
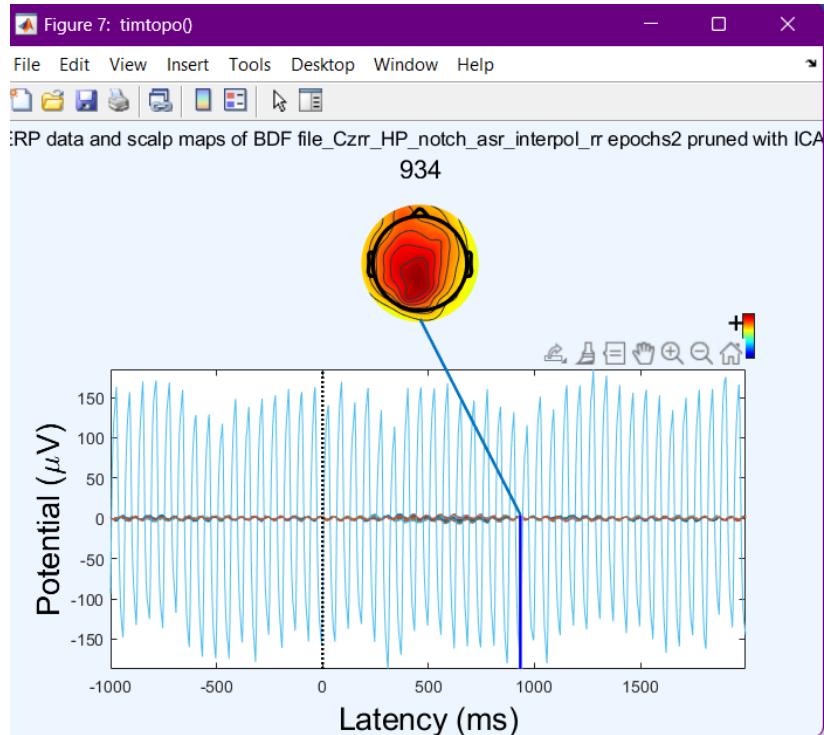
ECA)

چون ICA خیلی طول کشید و انجام نشد این قسمت ها انجام نمیشوند.

ECB)

Stayed: 1,2,4,5,6,7,10,11,14,16,22,62





همانطور که میبینید نتایج در این قسمت اصلا مناسب نیستند و p300 ها به درستی قابل مقایسه نیستند.

ECB)

Error

F)

همانطور که دیدیم بین قسمت های مختلف تفاوت هایی وجود دارد و بعضی از آن ها نتایج پرت و غیر قابل اعتماد و بعضی اصلا با دیتای داده شده قابل انجام نیستند و ارور میدهند.

به نظر من متدهای A و B بهترین روش هایی هستند که روی این دیتا کار میکنند و تقریباً کارایی مشابه هم دارند که تفاوت آن ها در زمان ایپاک بندی است.

قسمت مهم حذف دیتا با چشم نیز نقش به سزایی در انجام پردازش های ما دارد و حذف داده های دور ریختنی به صورت کلی به صورت نیمه اتوماتیک بهتر است.

| |
|--|
| Dataset 1:BDF file |
| Dataset 2:BDF file_highpass |
| Dataset 3:BDF file_highpass_notch |
| Dataset 4:BDF file_highpass_notch_ChDe |
| Dataset 5:BDF file_highpass_notch_ChDe_asr |
| Dataset 6:BDF file_highpass_notch_ChDe_asr_interpol |
| Dataset 7:BDF file_highpass_notch_ChDe_asr_interpol_reref |
| Dataset 8:BDF file_highpass_notch_ChDe_asr_interpol_reref epochs |
| Dataset 9:BDF file_highpass_notch_ChDe_asr_interpol_reref epochs2 |
| Dataset 10:BDF file_highpass_notch_ChDe_asr_interpol_reref epochs2 pruned with ICA |
| Dataset 11:BDF file_CA_highpass_notch_asr |
| Dataset 12:BDF file_CA_highpass_notch_asr_interpol |
| Dataset 13:BDF file_CA_highpass_notch_asr_interpol_reref |
| Dataset 14:BDF file_CB_highpass_notch_asr_interpol_reref epochs |
| Dataset 15:BDF file_CB_highpass_notch_asr_interpol_reref epochs2 |
| Dataset 16:BDF file_CB_highpass_notch_asr_interpol_reref epochs2 pruned with ICA |
| Dataset 17:BDF file_Czrr |
| Dataset 18:BDF file_Czrr_HP |
| Dataset 19:BDF file_Czrr_HP_notch |
| Dataset 20:BDF file_Czrr_HP_notch_ChDe |
| Dataset 21:BDF file_Czrr_HP_notch_ChDe_asr |
| Dataset 22:BDF file_Czrr_HP_notch_ChDe_asr_interpol |
| Dataset 23:BDF file_Czrr_HP_notch_ChDe_asr_interpol_rref |
| Dataset 24:BDF file_Czrr_HP_notch_ChDe_asr_interpol_rref pruned with ICA |
| Dataset 25:BDF file_Czrr_HP_notch_ChDe_asr_interpol_rref pruned with ICA epochs |
| Dataset 26:BDF file_Czrr_HP_notch_ChDe_asr_interpol_rref pruned with ICA epochs2 |
| Dataset 27:BDF file_Czrr_HP_notch_ChDe_asr_interpol_rref epochs |
| Dataset 28:BDF file_Czrr_HP_notch_ChDe_asr_interpol_rref epochs2 |
| Dataset 29:BDF file_Czrr_HP_notch_ChDe_asr_interpol_rref epochs2 pruned with ICA |
| Dataset 30:BDF file_Czrr_HP_notch_asr |
| Dataset 31:BDF file_Czrr_HP_notch_asr_interpol |
| Dataset 32:BDF file_Czrr_HP_notch_asr_interpol_rr |
| Dataset 33:BDF file_Czrr_HP_notch_asr_interpol_rr epochs |
| Dataset 34:BDF file_Czrr_HP_notch_asr_interpol_rr epochs2 |
| ✓ Dataset 35:BDF file_Czrr_HP_notch_asr_interpol_rr epochs2 pruned with ICA |
| Select multiple datasets |

دیتاست های تولید شده در انجام تمرین: