ASSIGNMENT 5 (due 16.11.2021)

Figure (1)
Compute the covariance matrix of your ERP data in the window [200 600] ms.
Compute the covariance matrix of your single trials data in the window [200 600] ms and and average all single-trial covariance matrices, to obtain one covariance matrix of the single trials. Plot the covariance matrix based on the ERPs and the covariance matrix based on the single trials. Do you see any difference?
2 points

Figure(2) and Figure(3)
 Perform PCA on ERP data using two time windows, one before and one after trial onset (e.g., -500 to 0 ms and 100 to 600 ms). Plot topographical maps and time courses of the first four components in two separate figures, one for pre stimulus and one for post stimulus.
Please be aware the eig function returns eigenvector and eigenvalues in ascending order of explained variance.
To construct PCA topographical maps, use the PCA weights (columns of the eigenvector matrix). To construct the PCA time courses, multiply the PCA weights (columns of the eigenvector matrix) defined by the pre - and posttrial time windows with the electrode time courses from the entire trial. Do you notice any differences in the topographical maps or time courses from before versus after stimulus onset? How would you interpret differences and/or similarities?
4 points