

EEG Analysis with LabScribe

Introduction

The **EEG Advanced Analysis Module** is used to analyze electroencephalograms. Using the module, it is possible to analyze conventional and custom EEG montages. It is possible to measure the frequency and amplitude of Alpha, Beta, Theta, and Delta wave forms from chosen segments of a multi-electrode EEG.

This document includes a step by step tutorial for using most of the features of the **EEG Advanced Analysis Module**. To use the step by step guide, you will need a previously recorded electroencephalogram to analyze.

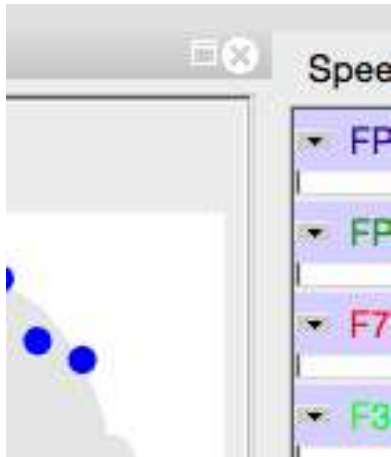
EEG Analysis: Step by Step

The EEG analysis is performed using the **EEG Montage** dialog, so you should first become familiar with this dialog.

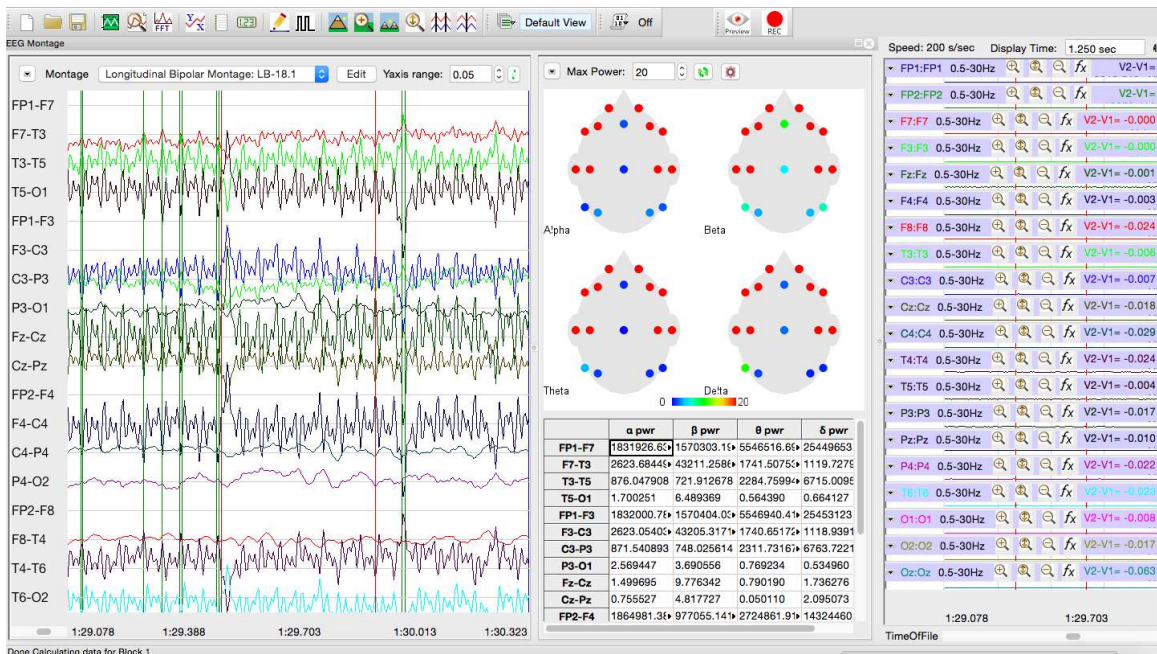
The EEG Montage Dialog

To display the **EEG Montage** dialog and familiarize yourself with its features:

- 1) Open a file with EEG data.
- 2) Select **EEG** from the **Advanced** menu. Choose **View Montages**, opening the **EEG Montage** dialog.
- 3) Familiarize yourself with the **EEG Montage** dialog, pictured below.
 - The EEG Montage dialog consists of two parts, one of which displays the data from the chosen montage segment and the other displays a graphical analysis of the wave form frequency and amplitude.
 - On the left is the montage configuration panel, showing the chosen segments from a specific montage.
 - On the right is the data analysis configuration panel, showing the relative frequency and amplitude of Alpha, Beta, Delta, and Theta wave forms, as both pictorial and table format.
 - The sizes of the two panels can be adjusted by dragging the edges of the panels.
 - A part of the raw data from the Main window can also be included on the screen at the same time as the **EEG Montage** dialog by choosing the desired view. Clicking the icon to the left of the X at the upper right of the dialog will shift the size of the dialog from a view showing only the dialog to a view including a portion of the Main screen data. The X will close the **EEG Montage** dialog.



EEG Montage dialog size selector.



EEG Montage dialog.

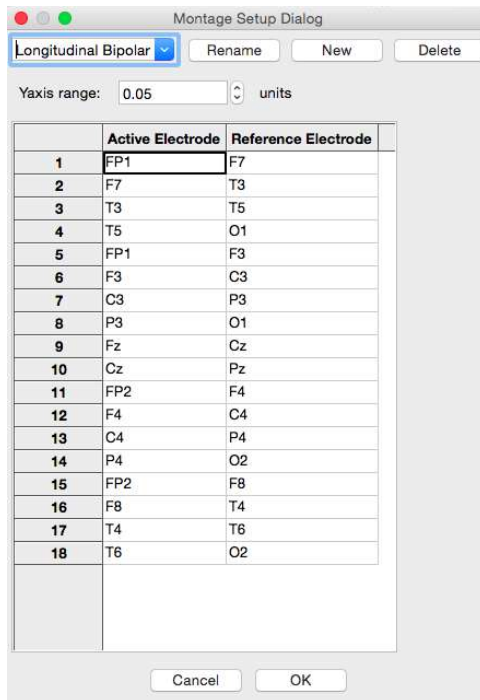
To configure the analysis, start with the montage selector and graph on the left. Use the toolbar across the top to configure the montage.



Montage configuration toolbar.

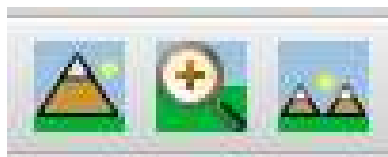
- 1) Click on the arrow at the left of the montage configuration toolbar to copy the graph to the clipboard.
- 2) The desired montage can be chosen from from a list of preconfigured montages shown in the montage menu.

- Click on the Edit button to open the Montage Setup dialog. In this dialog, a custom montage can be constructed from the available electrode pairings. Existing montages can be renamed, a new montage can be created, and montages can be deleted. The default y-axis scale can also be set here.



Montage Setup dialog.

- Indicate the desired Y-axis scale by indicating it in the Y-axis range text box. Adjust the graph to this range by clicking the recalculation icon to the right of the axis range selector.
- In order to display the new configuration, it is necessary to click the recalculation icon to the right of the Y-axis selector each time the configuration is changed.
- Set the amount of time to be displayed by adjusting the Display Time icons in the main toolbar.



Display Time icons.

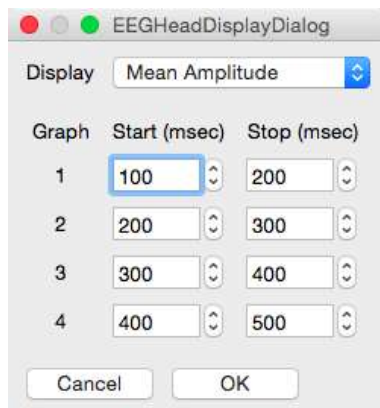
- Choose the specific segment to be displayed by scrolling through the Main window data to the desired location. Once the segment is chosen, click the recalculation icon to the right of the Y-axis selector to display this segment in the montage panel.

The right-hand panel analyzes the data from the chosen montage in the montage configuration panel. Use the toolbar at the top to configure the analysis.



Data analysis configuration toolbar.

- 1) The arrow at the left of the data analysis configuration toolbar offers the choice to copy the head graph or the data table to the clipboard, export the table data to a spreadsheet, or a selection from the data table to the Journal.
- 2) Choose the Maximum power to be calculated in the Max Power text box.
- 3) Click the green recalculation icon each time you desire to recalculate the power and amplitude data based on changes in the montage configuration panel or in the data analysis parameters.
- 4) Click the red gear icon to the right to display the **EEG Head Display Dialog**. In this dialog, you can choose whether the data table displays the relative powers of the Alpha, Beta, Delta, and Theta wave forms, or the wave form amplitudes (Mean or Max-Min) over chosen time durations in the selection.



EEG Head Display Dialog.

- 5) The head display indicates the frequency of the Alpha, Beta, Delta, and Theta waveforms or the wave amplitude (depending on which has been chosen) by electrode location.
- 6) The data table indicates the frequency or the amplitude by electrode location.