Developmental Electrophysiology LAB

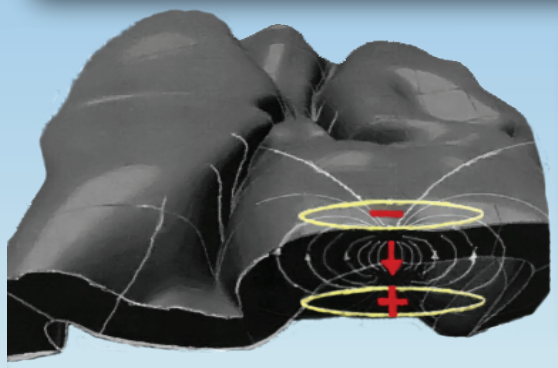
What is EEG?

EEG or electroencephalography is the recording of electrical voltages from the brain. In special circumstances, the recording can be done directly from the brain surface, but normally electrodes positioned on the scalp are used.

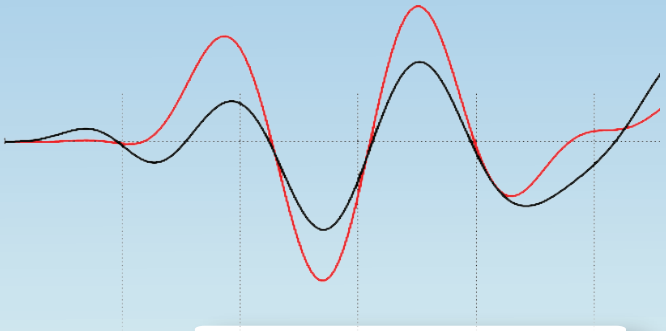
What's the difference between EEG and ERP?

EEG is the continuous, ongoing recording of electrical voltages from the scalp during an entire testing session. ERP stands for event related potential and is a portion of the ongoing EEG time-locked to a stimulus onset. The length of an ERP varies but is usually around one second. A single ERP typically represents one condition, calculated by averaging each trial per condition.

Below is a flow chart briefly describing how EEG goes from the brain to our computers.

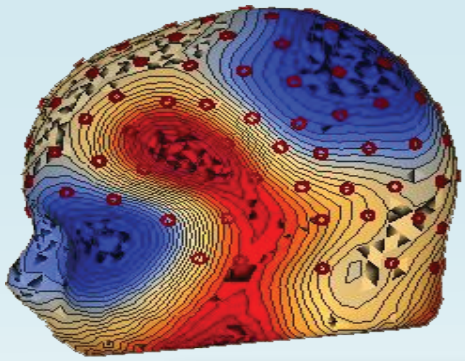


A group of neurons located in proximity to each other fire in synchrony to produce an electrical discharge perpendicular to the scalp.



The ongoing EEG is split up into one second intervals following stimulus onset. An average one-second waveform, or ERP, is calculated for each condition in the experiment.

We apply a "dense-array" EEG net containing 128 electrodes to record all of the fluctuations in electrical current during our stimulus presentation tasks.



The current forms a dipole with opposing polarity. If the current is traveling away from the scalp, we measure a negative wave (in blue) and a positive wave (in red) if the current is traveling toward the scalp.