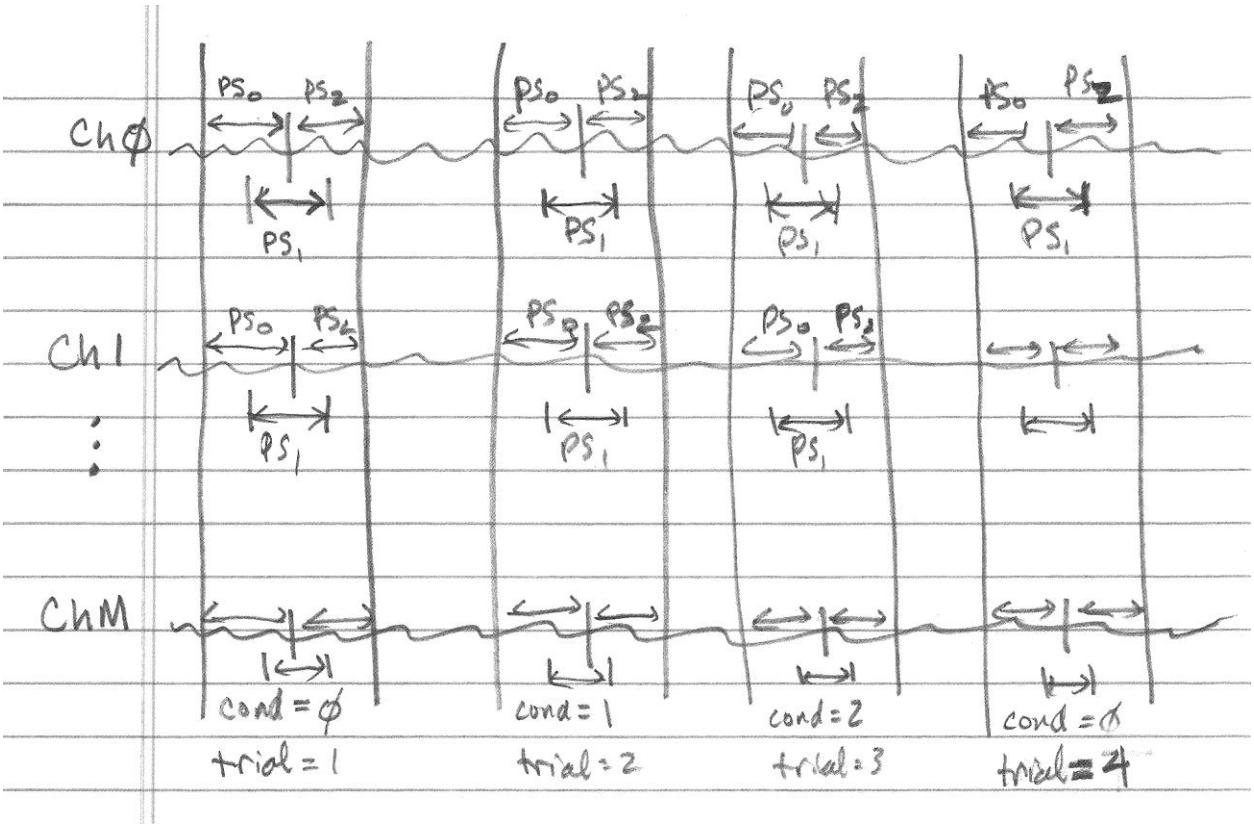
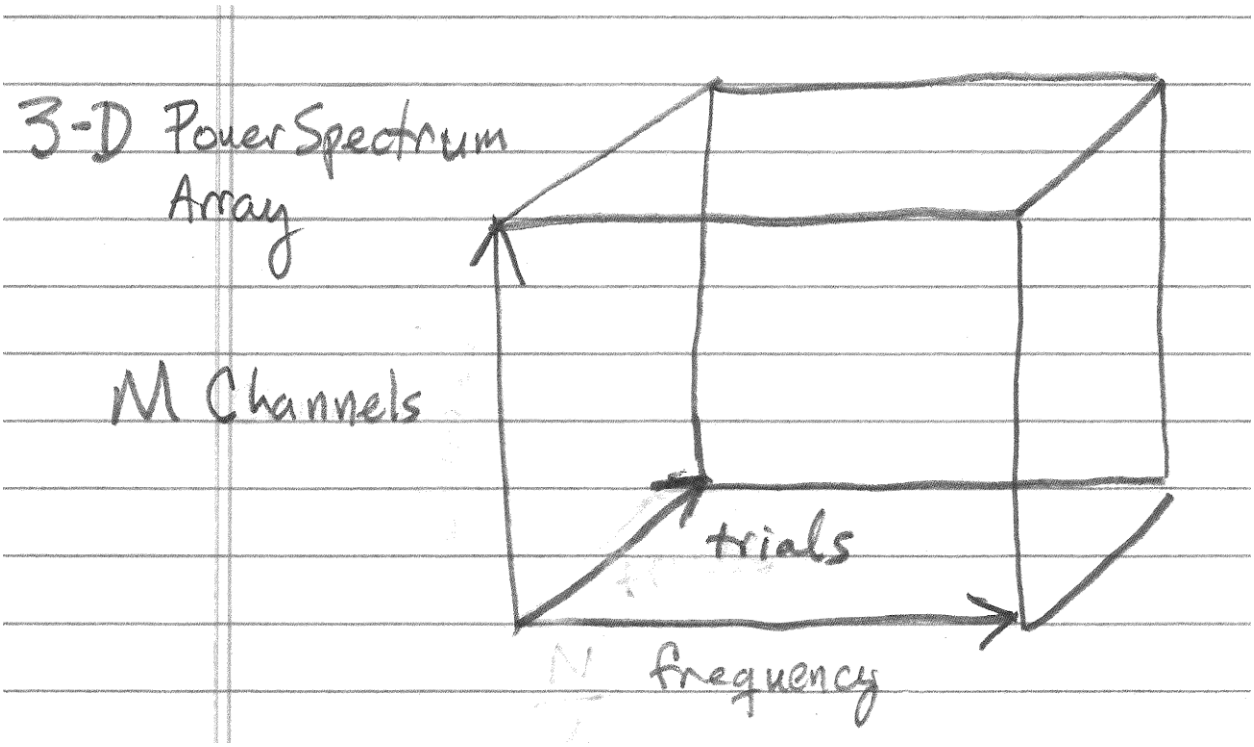
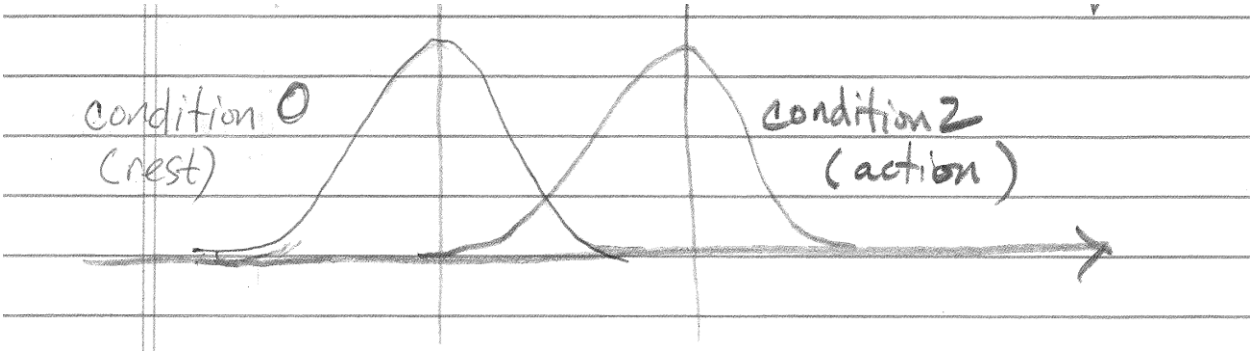
Analyzing BCI2000 dat Files



1. All electrodes are sampled at the Sample Rate for the entire session. These samples are stored in the **signals** variable. The sample rate is stored in **parameters** variable.
2. During the session, the user is prompted to either rest or perform some action. The timing of these conditions is encoded in the **states** variable
3. We want to compute the Power Spectrum (Magnitude^2 of the Fourier Transform) for every condition for every channel. This Power Spectrum is computed by averaging the power spectra of overlapping sub-segments within the trial.



4. You will end up with two 3-Dimensional PowerSpectrum matrices for condition 0 (rest) and condition 2 (action) as shown above.



5. For every channel/frequency pair, there is a distribution of the measured power for both conditions. The goal is to find the "best" channel/Frequency pairs.
6. The "best" channel/frequency pairs with have the narrowest distributions (small variance) and the widest separation between the means.