# SBE II: Homework 3

## Experiment-2:

In order to estimate , we recognize the relationship of exponential decay in the Calcium concentration waveform in the provided figure. Between potential spikes, we assert that current , which eliminates concern for the parameter value of in this case.

The relationship of exponential decay is as follows:

From the graph, we can pick two points (one at a peak and the other at a trough, prior to the next burst), and estimate based on the time and magnitude between those points. Rearranging the previous expression we get:

Evaluating the above for this trend demonstrated on the data in the figure provided yielded a value of . This value is quite close (2x) to the value assigned in the parameter list, so I would classify it as a reasonable approximation.

If we wish to expand this to as well estimate for , we can instead look at the rising edges of the waveform (when ) and calculate the slope of the line. Since this waveform is approximately linear for this rise, and both terms consist of , the slope, or generically , is approximately equal to . From doing this measurement on the graphs you are able to observe a value within approximately 20% of the set value of .