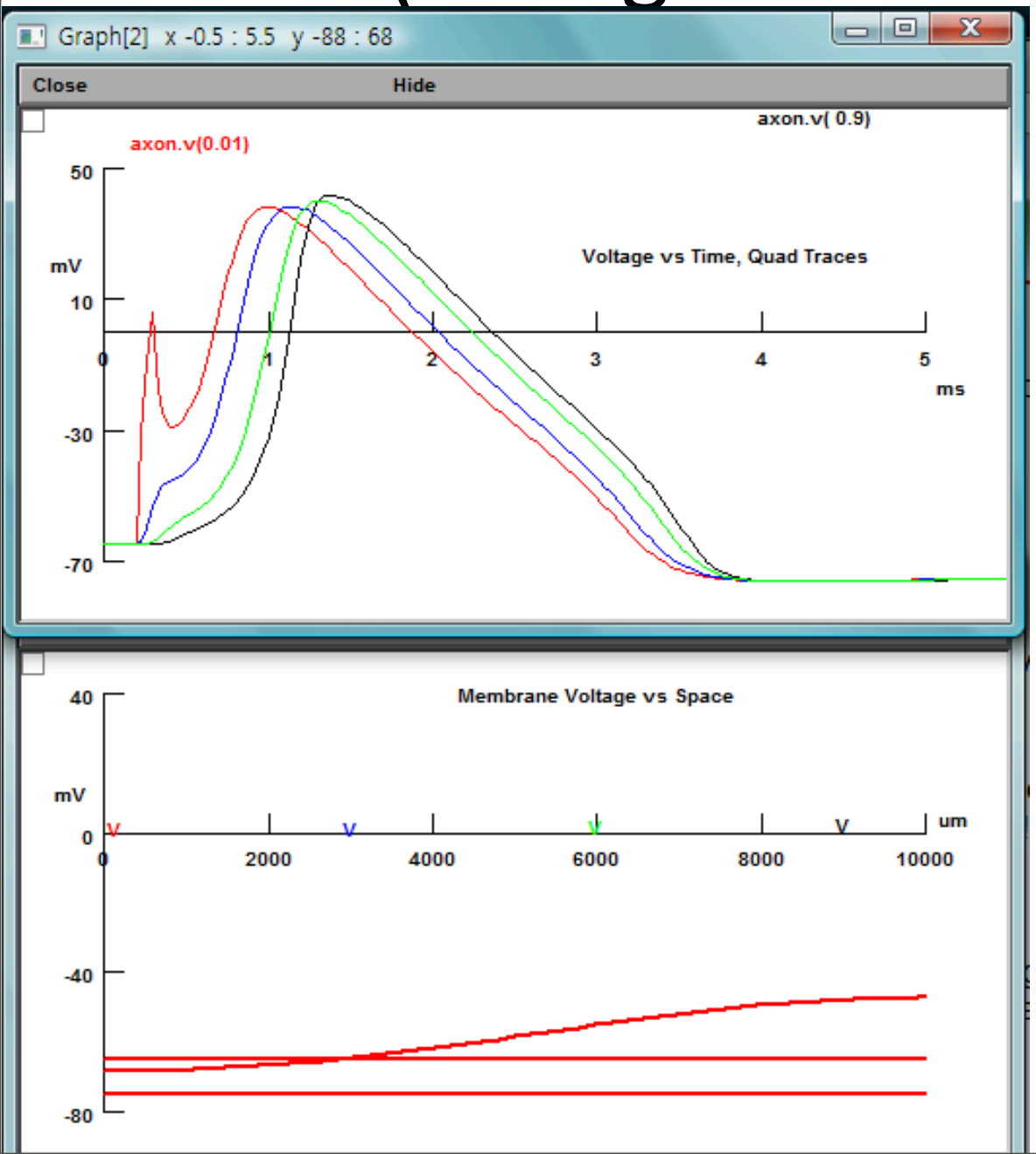
Lab N

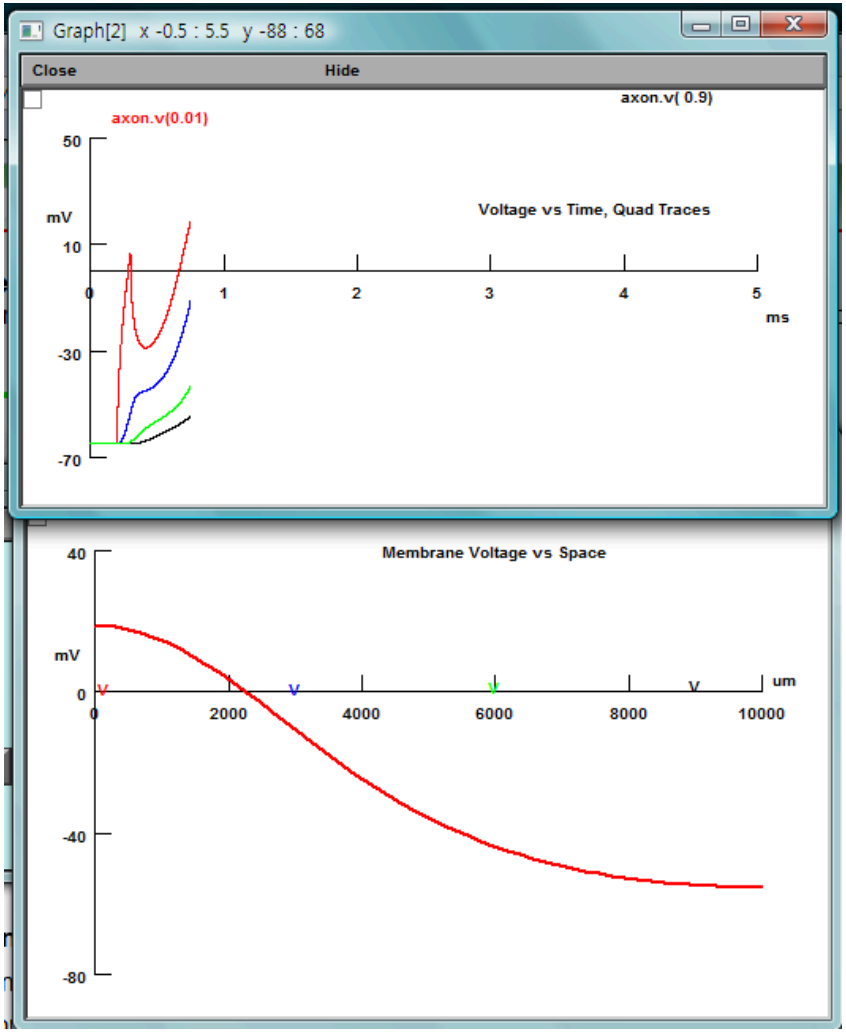
With Bonus?

Display the impulse as it travels along the axon (voltage as a function of space).

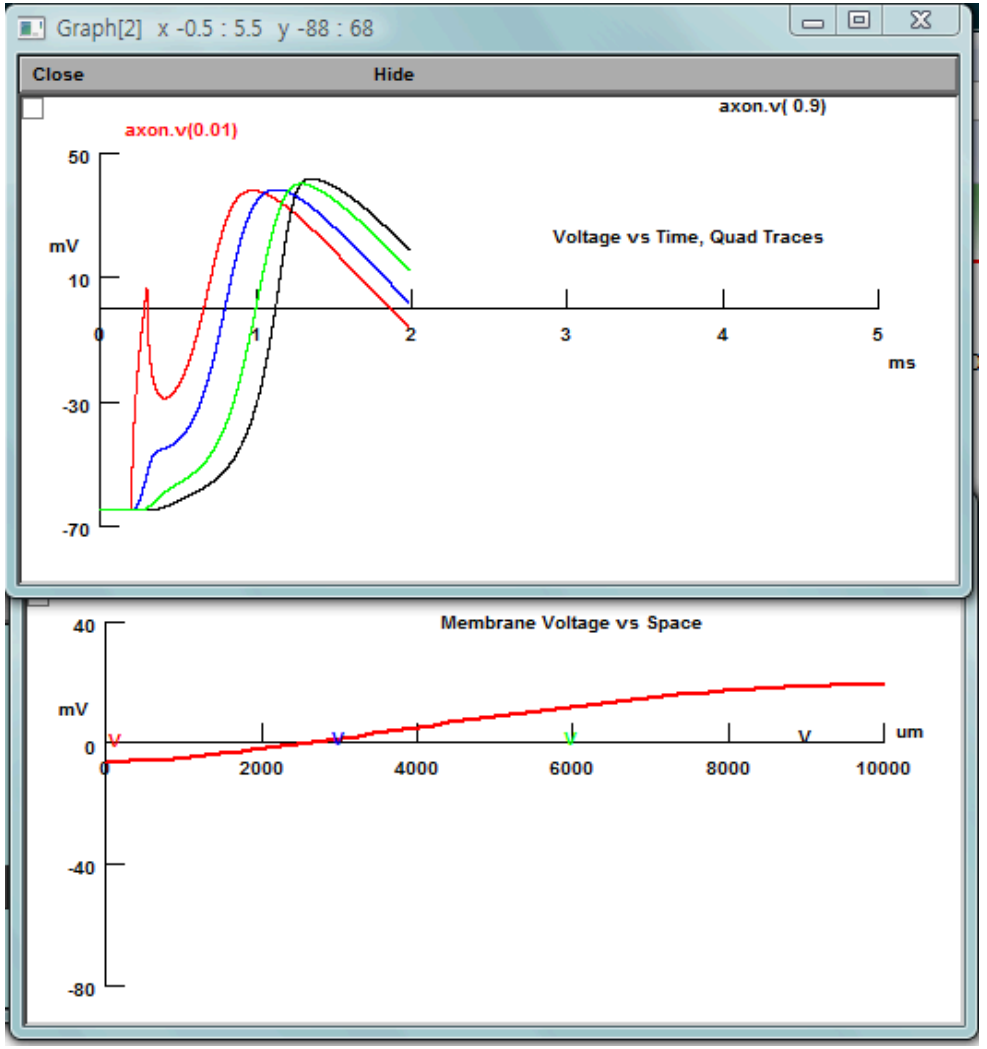


The full graph of the impulse as it travels along the axon. The membrane voltage vs. space plot is recorded as “keep lines”

Display the impulse as it travels along the axon (voltage as a function of space).

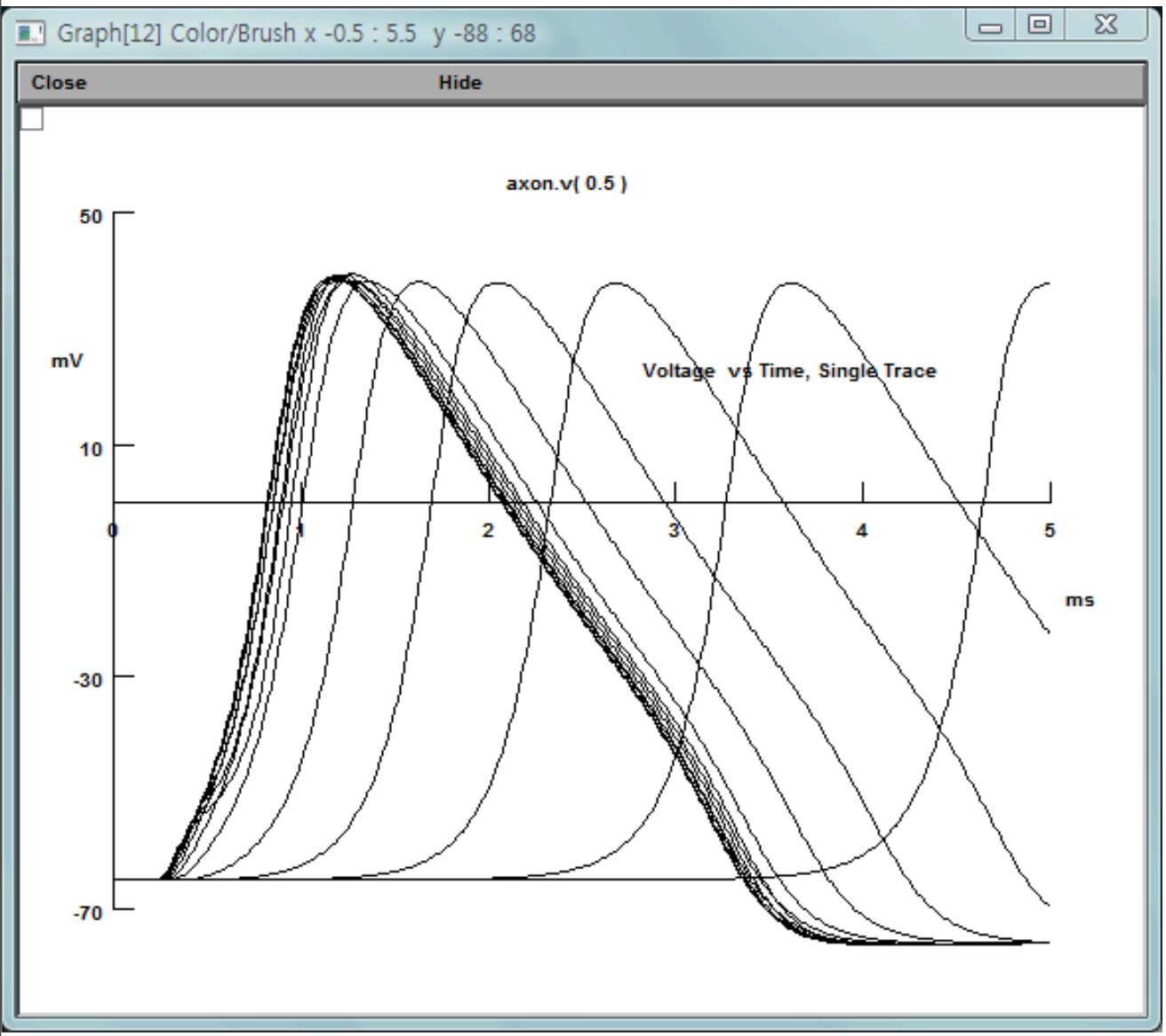


- Rising Phase



- Falling Phase

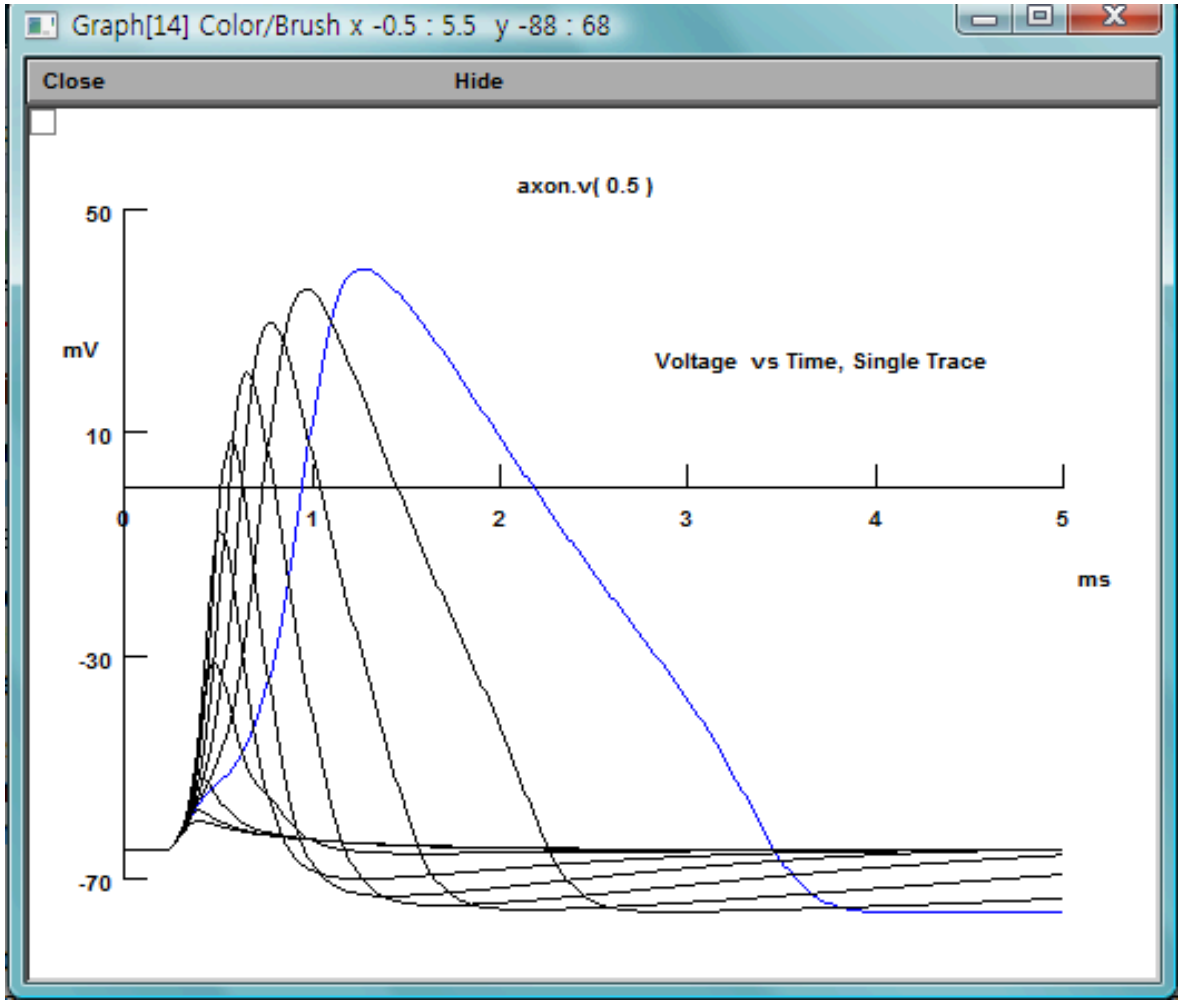
Observe the effect of changing the axon diameter on impulse propagation.



When I decreased the diameter by 50um each time, it showed more of the waveform untile about I decreased it to 300um. However, from 300um, it turned its direction and about 150um, it almost overlapped with the plot with 500um and as I decreased the diameter more, it showed less of the waveform.

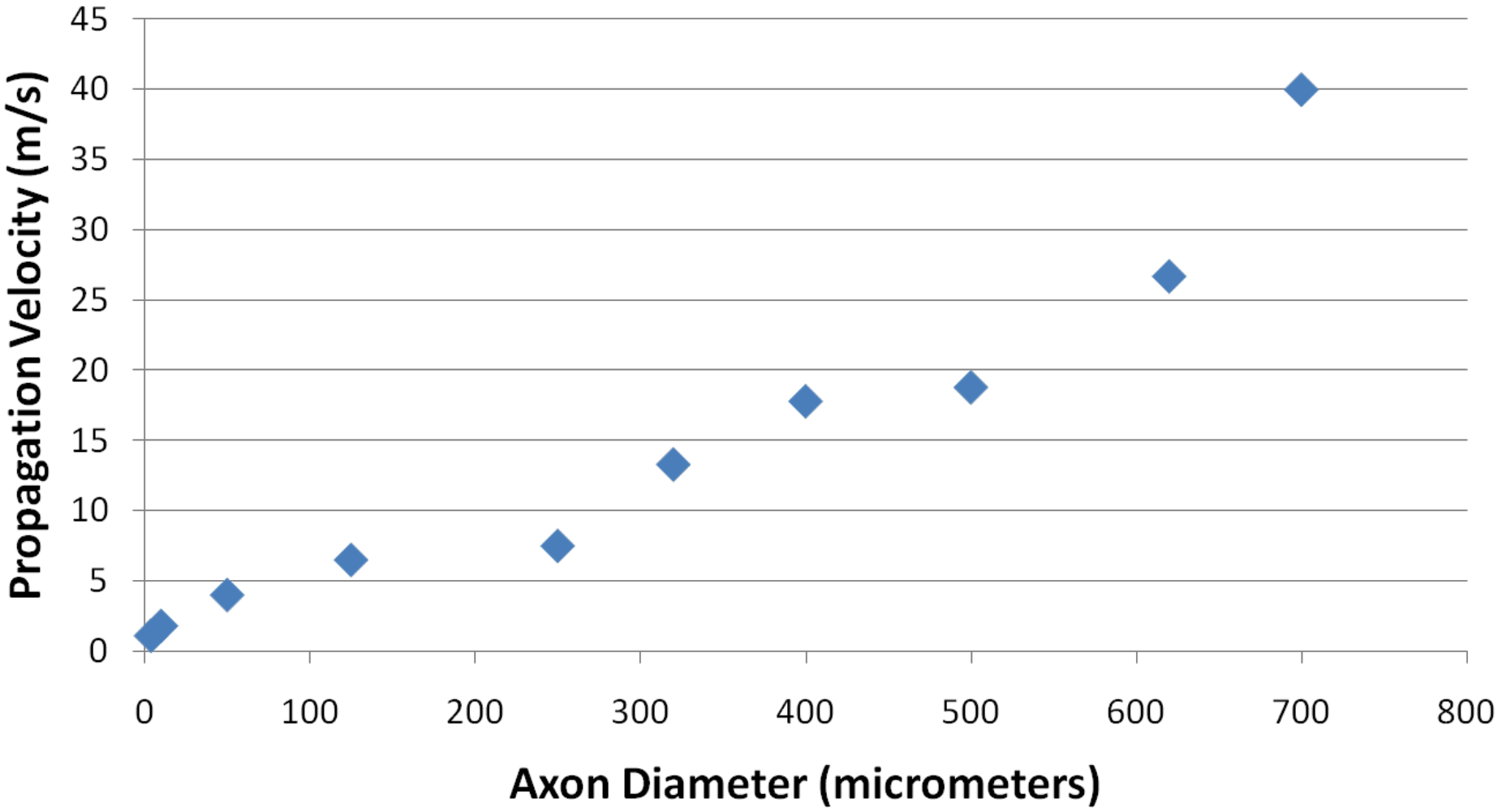
The shape of the plots are affected by the axon diameter and the effect is seemingly proportional to the change in the diameter.

Observe the effect of changes in temperature on the propagation of the impulse.



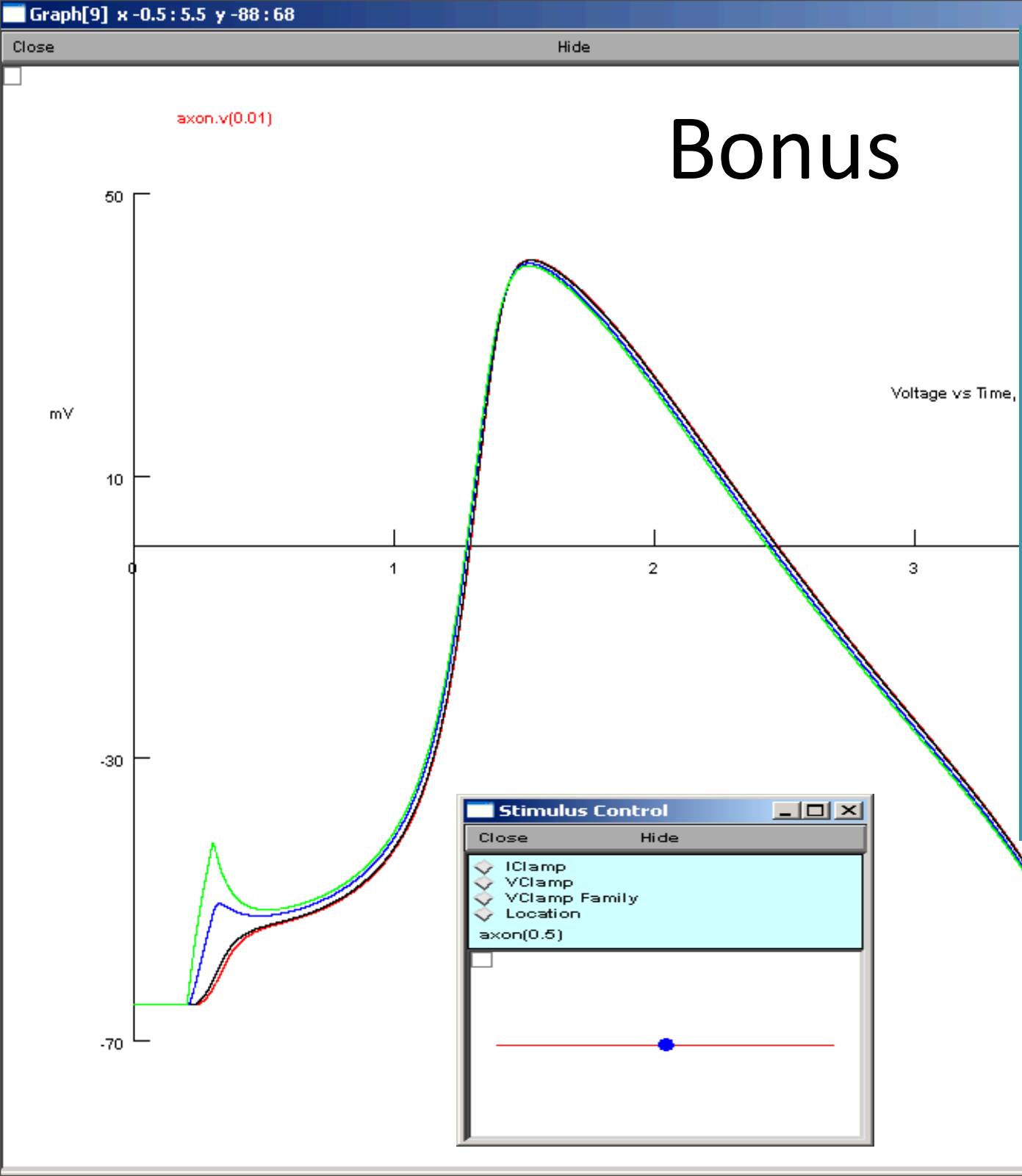
- I increased the temperature by 5 until I reached 51.3. As I increased the temperature, the action potential generated got smaller. Around 46.3, it seems that the action potential is not generated or to small to be regarded as an action potential.

Observation 4: Propagation Velocity



The relationship between propagation velocity and axon diameter appears mostly linear. The deviation from linearity is most likely due to the poor resolution of the voltage vs time plots from which the 0-crossings were recorded.

Bonus



When the stimulating electrode was placed exactly in the center (0.5), then all of the graphs overlapped, which made sense. However, it was interesting to note that at the beginning, green seemed to peak the highest, followed by blue and red and black being equal. Green is the recording site closest to the stimulating site towards the end of the axon and blue is the opposite point of the green, towards the beginning of the axon. (Could possibly indicate directionality of the current flow?)

I have been working on the bifurcation diagram from the ghostburster paper. I am in the process of running the trajectories in reverse to get the unstable equilibrium points and complete the bifurcation diagram.