Phys 641 Assignment 3

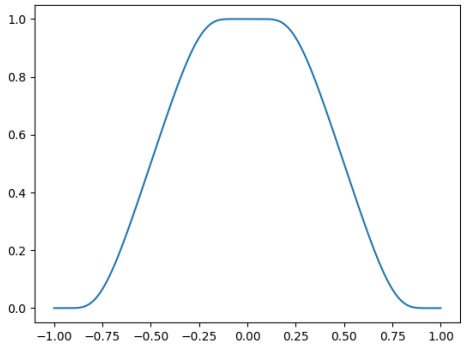
Summary Table

Event	Hanford or Livingston	Signal to Noise Ratio	Combined SNR added in quadrature (so X^2?)	Frequency of Half Weight (Hz)
GW150914	Hanford	19.005	522.959	512.797
	Livingston	12.719		588.555
LVT151012	Hanford	5.903	68.648	398.842
	Livingston	5.814		494.017
GW151226	Hanford	8.627	96.171	388.020
	Livingston	4.662		544.947
GW170104	Hanford	7.020	98.102	467.279
	Livingston	6.987		385.473

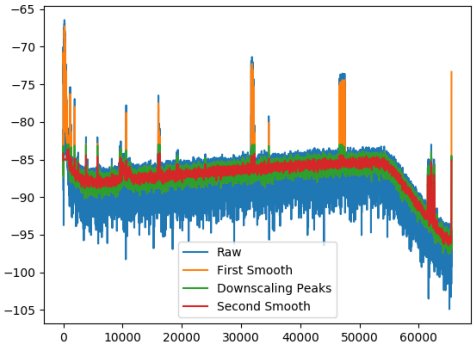
I realized that by doing the frequency I assumed that the

The following plots are just an example of the output of the A3_ligo.py code

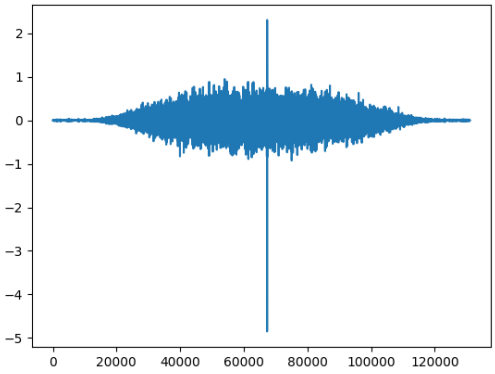
Window Shape—Planck-Taper Window



Smoothing Function showing smoothing after each step in fourier space



Gravitational Wave Signal



Part d:

These are just the sanity check to show that my loop worked correctly to calculate where half the weight comes from above and half from below. The plots show the individual T^2/σ^2 and then the cumulative distribution, the red line is where I calculated the halfway point to be and it is exactly half way between 0 and the maximum of the cumulative distribution as expected. I then converted to frequency from omega.