

Figure 4.19: Duration: 32.0s Start: 1126259447 End: 1126259479

| % Total | % Received | % Xferd | Average Speed | Time | Time | Time | Current |
|---------|------------|---------|---------------|------|-------|---------|---------|
| Dload | Upload | Total | Spent | Left | Speed | | |
| 100 | 253 | 100 | 253 | 0 | 642 | 0 | 643 |
| 100 | 1004k | 100 | 1004k | 0 | 910k | 0:00:01 | 2608k |

Figure 4.20: Data for this demonstration

31.174000000000003 Solar Masses Returned 64.0s of data at 4096.0Hz

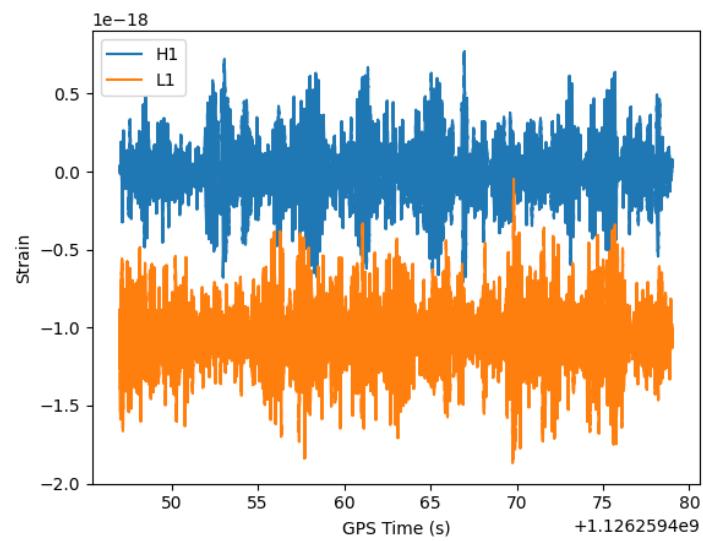


Figure 4.21: 'H1', 'L1'

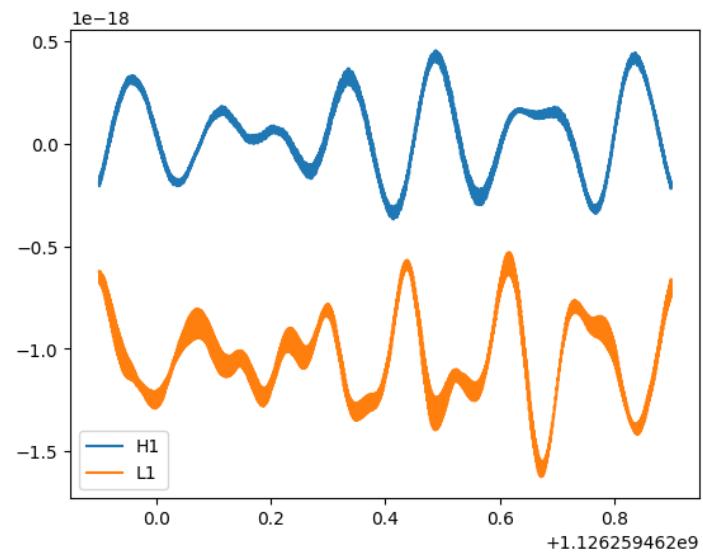


Figure 4.22: Zoomed to 0.5s

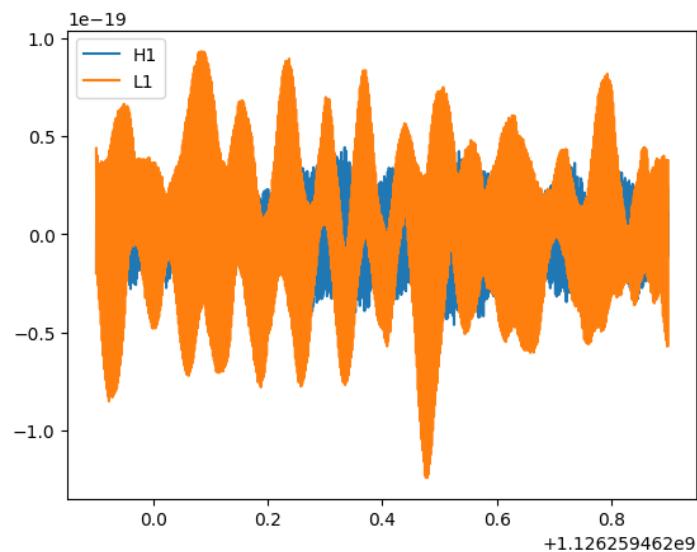


Figure 4.23: highpass frequency

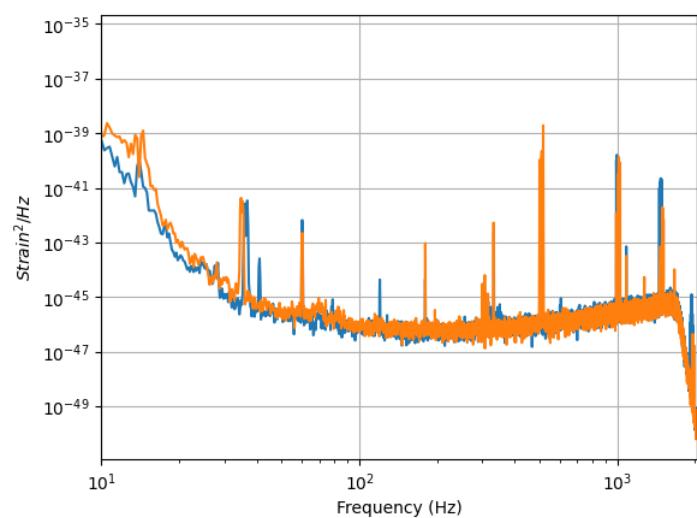
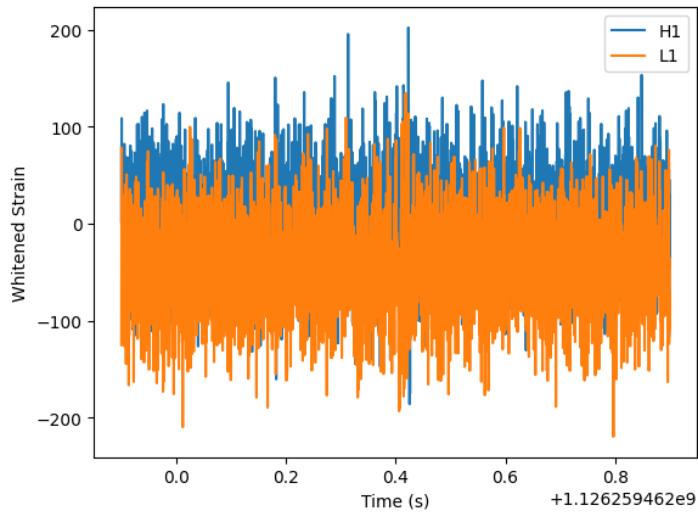
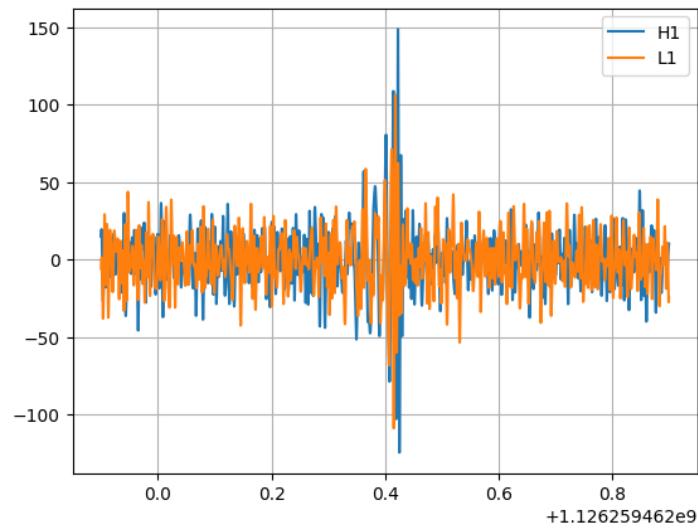
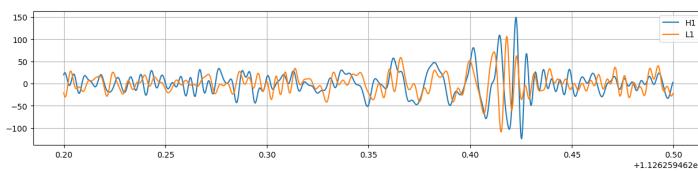


Figure 4.24: psd is a FrequencySeries

**Figure 4.25:** Whiten the data**Figure 4.26:** Apply a highpass filter (at 30 Hz) followed by an lowpass filter (at 250 Hz)**Figure 4.27:** Apply a highpass filter (at 30 Hz) followed by an lowpass filter (at 250 Hz) to tighter

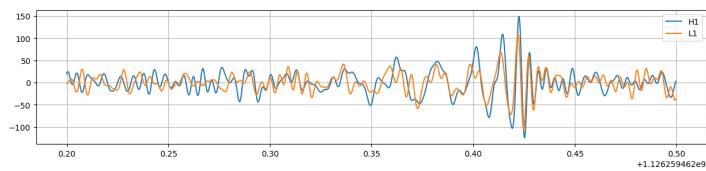


Figure 4.28: specially align the L1 data

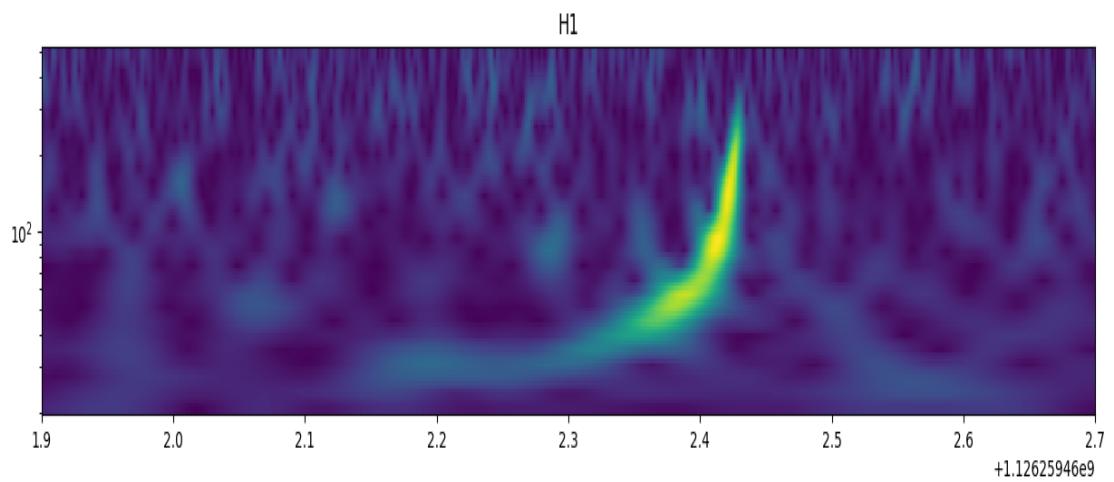


Figure 4.29: Visualizing excesses in the data with a Q-transform plot

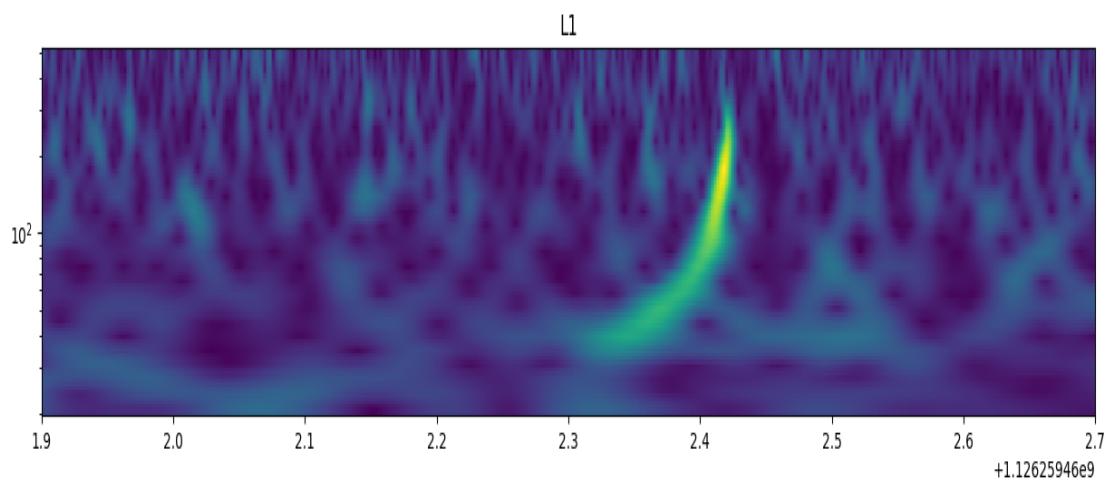


Figure 4.30: Visualizing excesses in the data with a Q-transform plot

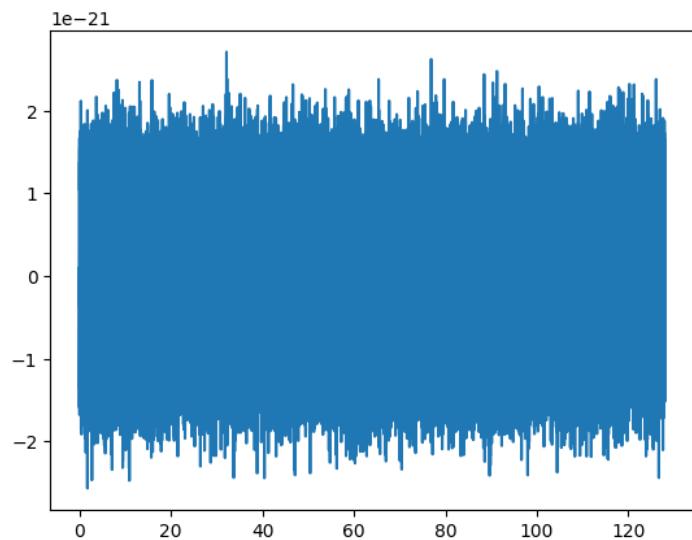


Figure 4.31: TEST-STRAIN

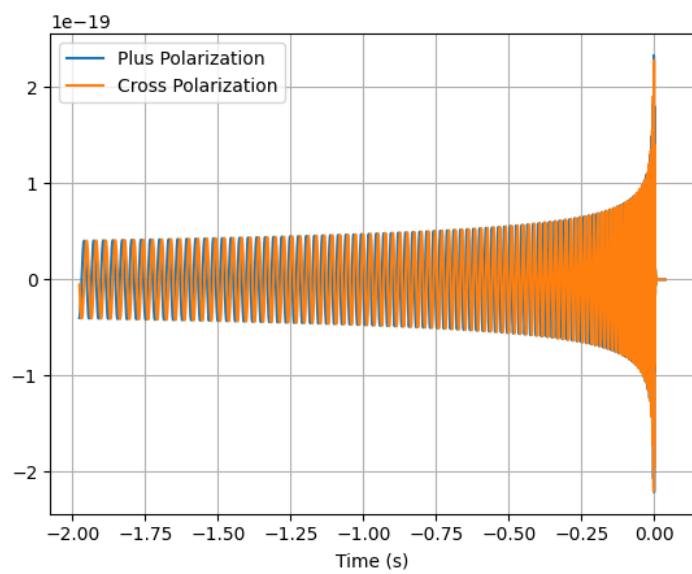


Figure 4.32: Generating waveform

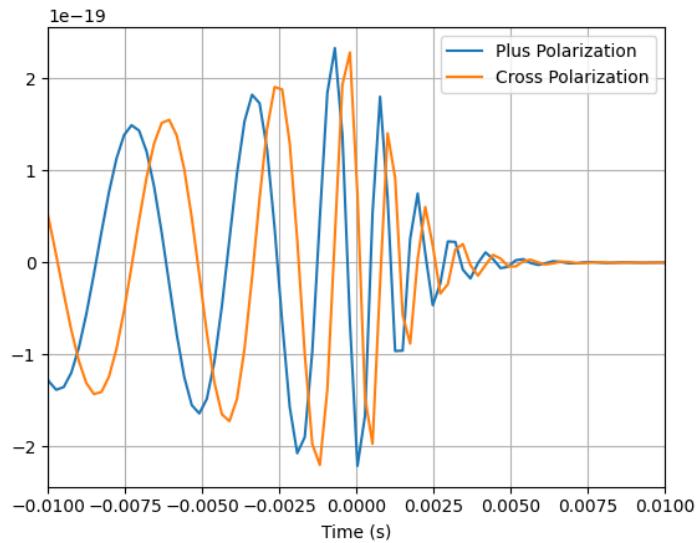


Figure 4.33: Waveform zoomed to 0.01s

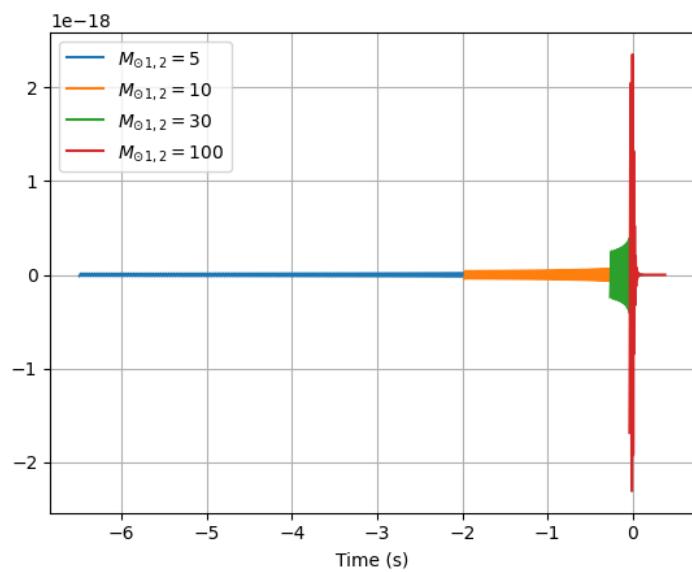


Figure 4.34: Waveform change with the mass of the binary

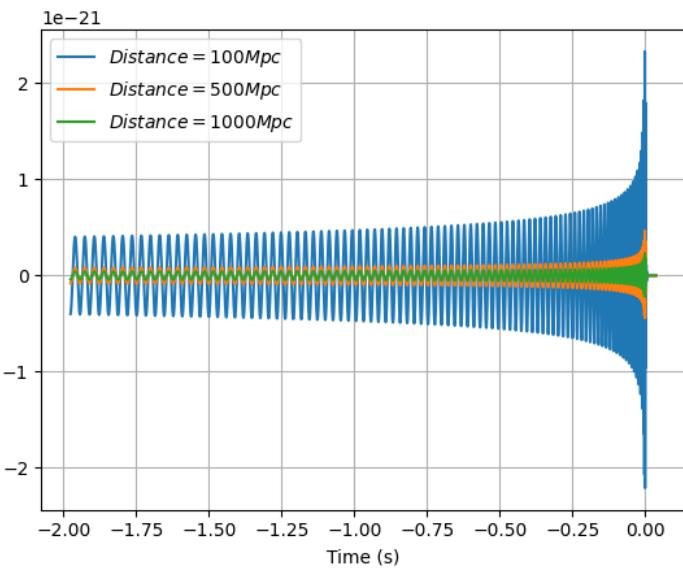


Figure 4.35: Changing the distance of the waveform

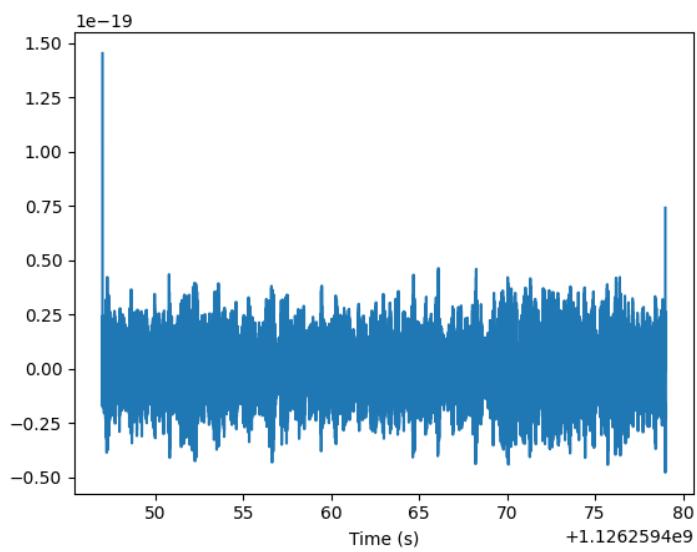


Figure 4.36: Remove the low frequency content and downsample the data to 2048Hz

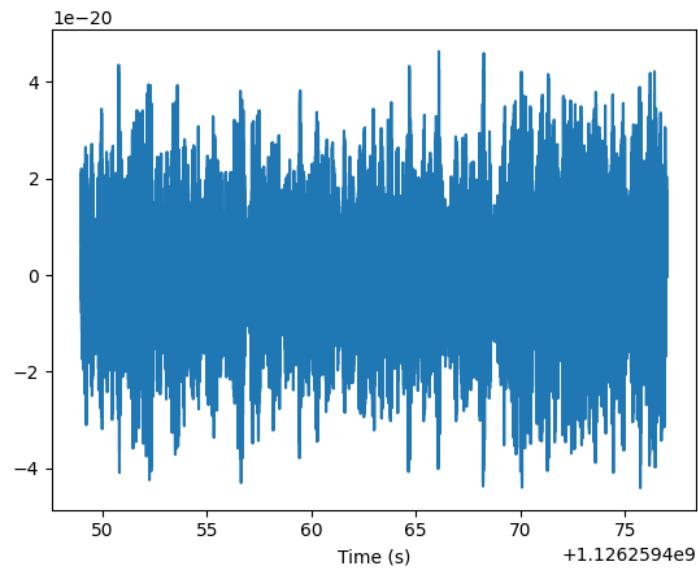


Figure 4.37: Remove 2 seconds of data from both the beginning and end

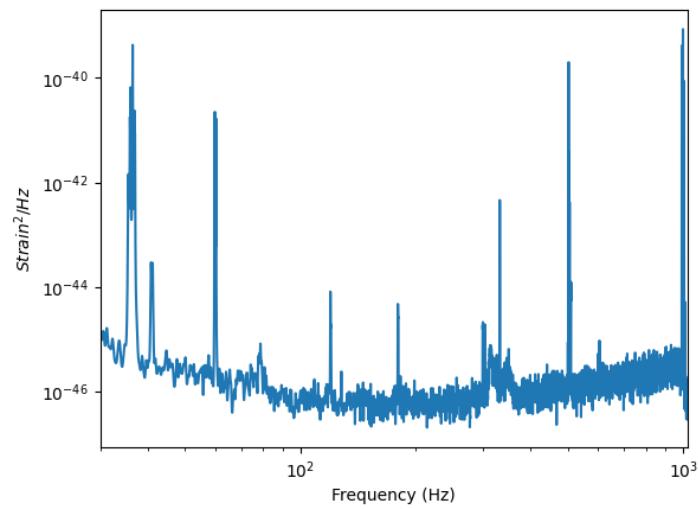


Figure 4.38: Power spectral density

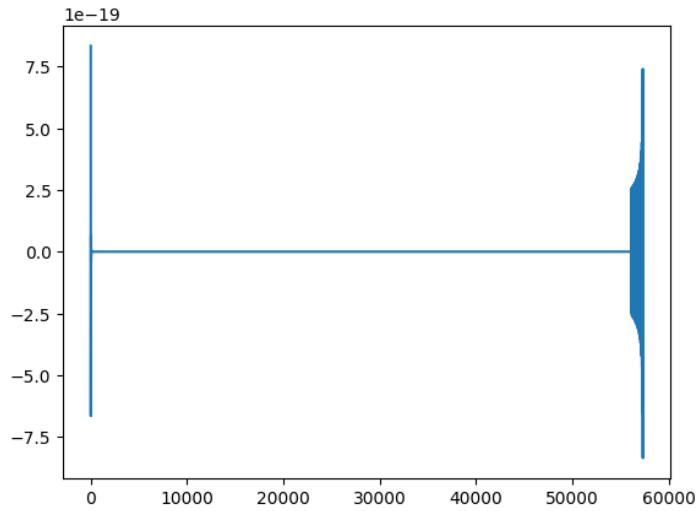


Figure 4.39: Our signal model and matched filtering involves laying the potential signal over our data and integrating

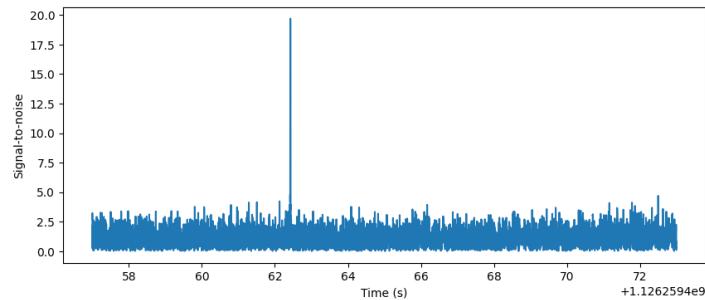


Figure 4.40: Calculating the signal-to-noise time series

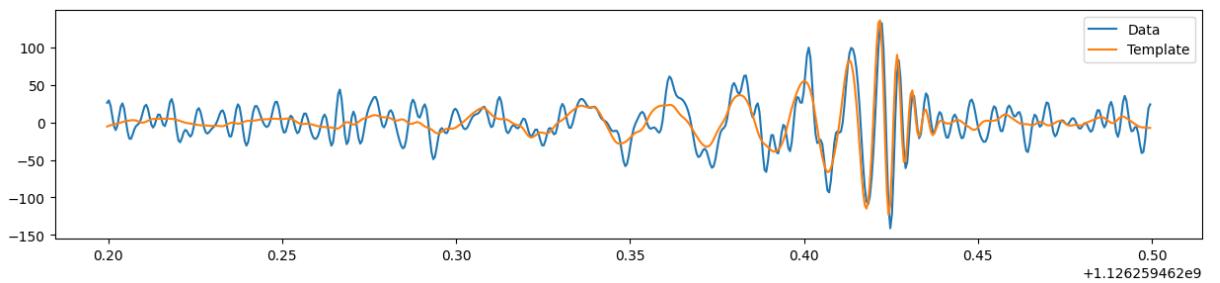


Figure 4.41: Visualize the overlap between the signal and data

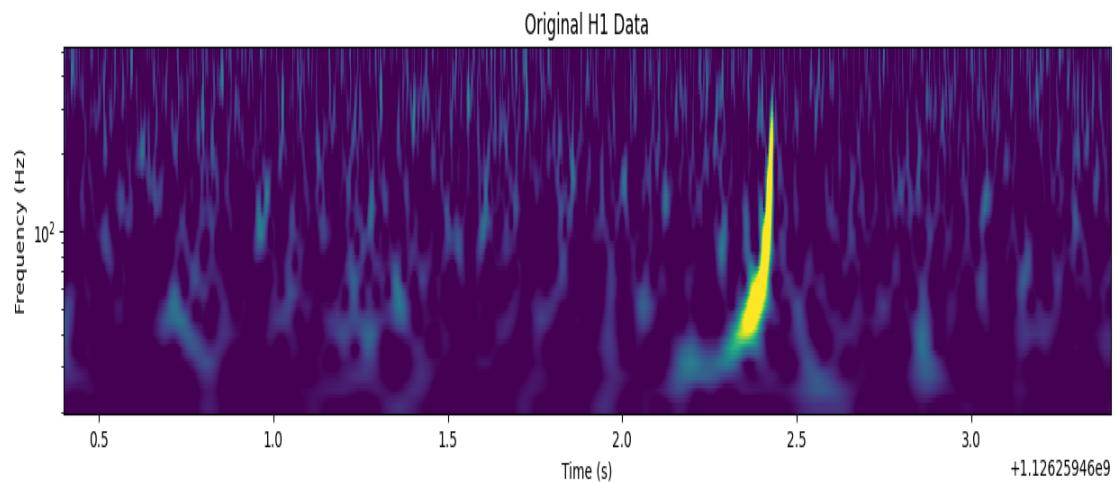


Figure 4.42: Subtracting the signal from the data

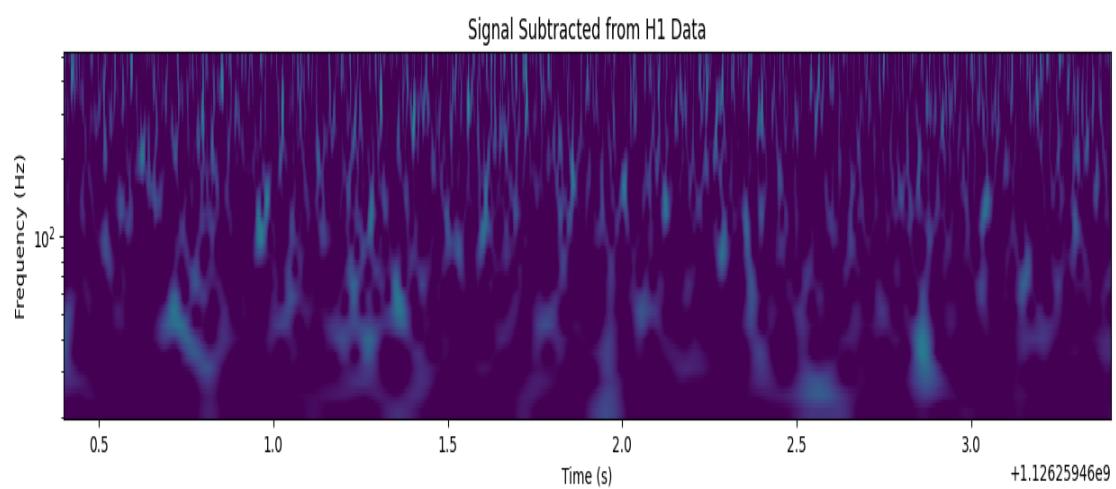


Figure 4.43: Subtracting the signal from the data