

Discussion of Results

The data we received showed that with increasing frequency the displacement grew smaller. We started with a frequency of .2 kHz and a displacement of 2.4 mm, and as the frequency grew to 20kHz the displacement shrank down to 0.04 mm. The difference in displacement with respect to time is not relevant. At 1 kHz we found that there was a maximum magnitude of 1.293 mm, a maximum velocity of 1.314 mm/s, and a maximum acceleration of 1.284 mm/s². Our data shows that the higher frequency the smaller the sound waves making the displacement of the speaker smaller. There was potential for error in our lab set up. The speakers were set up on two books to make them level with the laser, and the computer and speakers were all on one rolling cart. Therefore every time we needed to start and record our data or make any small changes we need to use the computer, doing so could have slightly shaken the cart and made the speakers move as well. The data we required was similar to that of what we expected with the average measurements of velocity displacement and acceleration, and the decreasing values of displacement with the increasing frequency.