Lab 1 Physics 15c: Oscillating Systems

Goal: Increase understanding of oscillating systems and be creative

Tasks for the lab:

1. Measure a resonant frequency of an oscillating system using two different techniques and compare the results. Try to explain any discrepancies.
2. Measure the Q of the system.
3. Attempt to maximize the Q
4. Attempt to shift the resonant frequency by at least 50%

Note: RLC circuits and pendulums are not to be used given what you have already done in 15a and 15b.

Available Materials (feel free to bring your own material, including musical instruments):

Balloons

Metal strips

Water dishes

Thin wooden boards

Piezoelectric crystals (they change their length in response to an applied voltage and they produce an applied voltage when their length is changed)

Fabry-Perot interferometer

Diversely shaped plastic and metal objects

Microscope slides and cover slips

Thesis clips, clothes pins, rubber bands, and tape

Oscilloscopes

Microphones

Laser pointers

LED's

Photodiodes

Phototransistors

Video Cameras

Strong permanent magnets

Audio Speakers

Signal generators

Tools