

LAB A8 & A9: Instructions for Use of the Vertical Accelerometer

10/1/02

The vertical accelerometer consists of a plastic tube (to be held vertically) that contains a lead bob hanging from a spring. A rubber band is attached to the bottom of the accelerometer and goes around the user's wrist (so that the accelerometer isn't lost if the state fair ride does something unexpectedly exciting). There is a series of 4 or more red tape marks that should be equally spaced along the length of the tube.

Qualities of a good accelerometer:

- a) the spring is uniformly stretched and not deformed
- b) the lead bob hangs from the center of the spring hook at the bottom of the spring
- c) some part of the lead bob must be hanging at the level of the **second** red tape mark from the top

The accelerometer can be used to measure vertical accelerations in both the up and down directions by noting the position of the lead bob relative to the red marks. Always record the position of the bob relative to the marks, not a numerical value of the acceleration or the apparent weight.

Note: This handout expects that you fill in the parts that are missing. Not simply informational.

if the accelerometer is upright

if the accelerometer is upside down

acceleration
experienced

apparent
weight

acceleration
experienced

apparent
weight

(in units of
earth "g" 's)

(in units of
true weight, mg)

(in units of)
earth "g" 's)

(in units of
true weight, mg)

1st red	← if bob here:	1 g down	0
2nd red		0 g	1
3rd red		1 g up	2
4th red		2 g up	3
5th red		3 g up	4