Physics 207 - Lab 4 - Centripetal Motion

section number: GH1

bench number: 02

Today's date: Monday 24th of October 2016 08:42 PM

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Lab Instructor: Amol Deshmukh

Proposed Experiment

Our plans: - As the first step, we have to obtain the mass of the bob, which we found out to be m=447g or, in SI units, m = 0.447 kg. - The next step was to measure the radius for our circular motion in the setup that was given in the lab, which came out to be r = 16.m cm or, in SI units, r = 0.165m. - Next step we had to figure out the circumference of the circle, which is equal to C = 2*pi*r or C = 1.0367 m . - Then we used the setup to make one full spin of the bob at a certain speed, and came up with a time that it takes to do one full spin, which is equal to t = 2.92 seconds. - After that we found the velocity using the formula v = C/t, which came out to be v = 0.355 m/s. - The next step was to find the centripetal force using the formula F = mv^2 / r, so our F came out to be Fc = 0.34N. - Now we will try to measure the force the other way, using the spring and the pans. - Steps: r = 0.165m; 6.28s for 10 revolutions; 0.628s / 1 revolution; Fc = 0.6kg * 9.8 m/s^2 = 5.88N; F = mv^2 / r = (0.447kg*(1.65)^2) / 0.165m = 7.37N. - Steps: r = 0.18m; 6.77s for 10 revolutions; 0.677s for 1 revolution; c = 1.1309m; mass = 65-g = 0.65kg; Fc = 0.65kg* 9.8m/s^2 = 6.37N; F = mv^2/r = (0.447kg*(1.66)^2) / 0.18 m = 6.9N

Lab instructor's initials: AD