

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Physics Department

Physics 8.01T

Fall Term 2004

Experiment 04: Uniform Circular Motion

Section and Group: _____

Participants: _____

Each group need turn in only one report, but you might want to make extra copies to take your data away for later analysis.

Fill in the table below with the numbers from your experiment. Enter at least three non-zero values of ω , four if you made that many measurements.

ω	0				
r_m					

When you fit these data by an expression of the form

$$r_m(\omega) = \frac{A}{1 - (\omega/\omega_C)^2} :$$

1. What value did your fit give for A , and how does it compare to your measured r_0 ?
2. What did your fit give for the critical frequency ω_C ?
3. Solve $\omega_c = \sqrt{k/m_s}$ to find k for the spring in your experiment and report the answer here.
4. What root mean squared error did the fit give you? How does it compare with the accuracy you estimate for your measurements of $r_m(\omega)$? (Remember, if you used a User-Defined Fit in *DataStudio*, divide the program's Root MSE by the square root of the number of data points you used in your fit.)