**Measuring a Magnetic Dipole via Harmonic Oscillation**

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**Introduction**

Oscillations are among the most important motions to understand when dealing with physics on both a macro and micro scale; the oscillation of an object can be used to determine specific properties of said object. In this case, we placed a cue ball containing a magnetic dipole in a constant magnetic field generated by a near Helmholtz coil (so as to create a consistent magnetic field in the area that the cue ball was placed) and allowed it to oscillate. By changing the current through the coil and measuring the change in the frequency of oscillations, we were able to calculate the strength of the magnetic dipole. Given the input of the current (our independent variable) and the output of the frequency (out dependent variable), a simple way to draw a comparison between the two would be to find a method by which we can linearize the graph of the values such that the slope of the line would be our value for the magnetic dipole. To linearize this graph, we could not just place the raw values on the axes, rather we calculated values that depended on these raw values. TODO: Equations for the axes.