

Physics Investigation 9 Task Sheet

Observation

When a magnet moves near to a coil connected to a galvanometer, the meter deflects.

Problem

How does the movement of the magnet affect the size of the deflection?

Hypothesis

Aim

Principle

Electricity is produced by a moving magnet.

In this investigation, the following variables are involved :

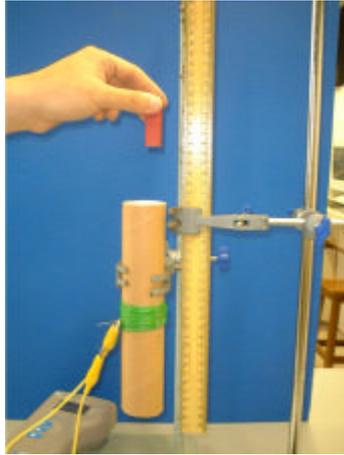
independent variable - _____

dependent variable - _____

Equipment and materials

1. desktop computer x1
2. datalogging interface x1
3. potential difference sensormeter x1
4. magnet x1
5. coil x1
6. stand and clamp x1
7. newspaper

Set-up



Procedure

1. Wind a coil of 20 turns on a paper tube;
2. Connect a potential difference sensor to the coil;
3. Connect the potential difference sensor to the computer via the datalog interface;
4. Choose the range -1V to 1V on the potential difference sensor;
5. Set the recording feature of the datalogging to "fast" mode, and choose the time for recording to "**200ms**";
6. Clamp the paper tube with the coil vertically on a stand;
7. Put a pile of newspaper or other soft materials underneath the coil to protect the bench from being damaged by the falling magnet;
8. Drop the magnet from a height of 10cm above the coil. At the same time, press the record button on the computer;
9. Plot a graph of voltage (induced emf) against time;
10. Repeat steps 8 and 9 for other heights (20cm , 30cm and 40cm) of the magnet above the coil;
11. Compare the graphs.

Precautions

1. The magnet should be allowed to fall vertically;
2. The turns on the coil should be evenly and closely packed;
3. As the interval for recording is very short (200ms), several trails are needed to make sure that the emf induced is within the 200ms time interval.
4. Orientation of magnet should be constant when dropped.

Results

Interpretation

Possible errors

Improvement

Conclusion