CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)

Adam J. Phillips

Project Number

36773

Project Title

Get It Going with the Gauss Gun: Magnetic Linear Acceleration

Abstract

Objectives/Goals

The objective of this experiment is to test the Gauss Gun to find out which combination of magnetic stations and the distance between those stations, will shoot the ball bearings the farthest.

Methods/Materials

Two 3/4" dowels, wood glue, 1/2" ball bearings, 1/2" neodymium magnets, tape, ruler, tape measure, shallow box full of sand, sharpie, table, flat piece of styrofoam.

Results

In testing the different distances between magnetic stations, I found that the distance that produced the farthest shot was seven centimeters between magnets. I also found in my tests that the more magnetic stations included in the chain reaction, the farther the ball bearing would go.

Conclusions/Discussion

I found that there was an optimal distance between magnets that produced the best result. The number of magnetic stations also had a direct impact on the results of my trials. The best combination of distance between magnets and number of magnetic stations was 7 cm between stations and 8 magnetic stations total. Small adjustments in distance or quantities of stations had a significant impact on the results. This means that accelerating an object with magnetic forces has an optimal calibration.

Summary Statement

This experiment demonstrated that there is an optimal combination of magnetic stations and distance between magnetic stations that will produce the farthest shot from the Gauss Gun.

Help Received

I researched the topic on-line and my dad helped me build the track and assisted me in changing the magnetic stations during the trials.