CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)
Ian T. Austin

Project Number
J0903

Project Title
Gauss Gun

Abstract

Objectives/Goals
The object of my experiment is to see if the kinetic energy of the projectile that is being shot by the gauss gun will increase linearly as the magnetic stages increase.

Methods/Materials
Made gauss gun with grooved wooden planks and neodymium magnets, steel balls. Built velocity measuring device with 2 small planks, infrared emitters and detectors. Wired this device to an arduino board using a you tube source# breadboard basics# made a few modifications of my own and measured the velocity of each magnetic stage on my computer. Then converted the velocity to kinetic energy using the equation (KE=mv^2) and graphed it to see if it was linear.

Results
After multiple tests, my results showed that the kinetic energy did increase with each added stage, but it increased at a decreasing rate and eventually leveling out.

Conclusions/Discussion
In conclusion, the kinetic energy of the projectile does increase but it is not linear. This may be caused by variables such as surface friction, deformation of balls, or moving of magnets.

Summary Statement
My project is about investigating the properties of a gauss gun with increasing stages to see if the kinetic energy will increase linearly.

Help Received
Dr. Max Austin, my father, helped me figure out the circuit of the velocity measuring device. General Atomics provided me with surplus wires.