CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)

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Project Number

J0930

Project Title

The Effect of Neodymium Magnets on Induction Loop Traffic Detectors

Abstract

Objectives/Goals

My goal in this project was to test whether neodymium magnets will assist scooters to trip difficult inductive loop traffic detectors.

Methods/Materials

Materials:
Neodymium magnets (4)
Car
Scooter
Accessible inductive loop traffic light
Cell phone
Procedure:
1)Stick neodymium magnets to square piece of Velcro. Attach the adjacent piece to the bottom of the scooter, or strap on foot, making sure they will be parallel to the ground.
2)Download "Physics Toolbox Magnetometer" to cell phone.
3)Go to location of traffic light.
4)Open application and press record.
5)Place cell phone in center of lane, making sure no other vehicles are in that lane, and that the light is red.
6)Drive scooter over edge of the loop on either side of the cell phone.
7)If magnets are on foot, place foot carefully on the edge of the loop.
8)Once the light has turned green and the scooter has gone, pick up cell phone and press stop.
9)The magnetometer will show the change in the magnetic field due to the neodymium magnets.
10)Conduct experiment without neodymium magnets, then with car.
11)Compare the difference in the change in the magnetic field over time with the different variables.

Results

My results showed that the average change in the magnetic field over time for the scooter with the neodymium magnets and the car were very similar. This shows that the neodymium magnets do help to change the electromagnetic current much more than the scooter without the neodymium magnets.

Conclusions/Discussion

I conclude that neodymium magnets are strong enough to assist scooters to trip inductive loop traffic light detectors.

Summary Statement

Are neodymium magnets powerful enough to trip induction loop traffic detectors while on or near a scooter?

Help Received

Mother drove scooter, helped make model and charts. Viewed computer box with help and under supervision of Dr. Duncan Hughes.