CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
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Project Number
J0726

Project Title
Discourse on Asymmetrical Capacitors

Abstract

Objectives/Goals
The goal of my project was to test three different shapes (square, isosceles triangle, equilateral triangle) of asymmetrical capacitors to see which produces the most thrust when 30kv of electricity are run through it.

Methods/Materials
Materials: 1. 30kv DC power supply; 2. 8 1 ½ v D batteries; 3. 2 casings that connect 4 D batteries each and make one 6v battery; 4. Balsa wood; 5. Aluminum foil; 6. 30 gauge enameled copper magnet wire; 7. 40 gauge copper wire; 8. 16 gauge copper wire; 9. Scissors; 10. Super glue; 11. Hobby knife; 12. Meter stick; 13. Triple beam balance; 14. Parchment paper; 15. String.

Procedure: 1. I built the three shapes of Lifters; 2. I weighed all three of the Lifters; 3. I added tape to he isosceles triangle and the equilateral triangles to make them the same weight as the square (3.5g); 4. I hung the Lifters on a string from the ceiling like a pendulum. I ran 30kv at 1ma though them and measured how far off center they moved; 5. I correlated and interpreted my data.

Results
The equilateral triangle and the square performed very similarly, with only 1.3cm difference in the averages. However, the isosceles triangle performed did not do nearly as well as the others.

Conclusions/Discussion
The difference in average height between the equilateral triangle and the square are negligible. However, the isosceles triangle did not perform very well; showing me that either even angles or sides boosts the performance of the craft.

Summary Statement
My experiment was to test three different shapes of asymmetrical capacitors to see which produced the most force.

Help Received
My mother held a ruler up to measure the distance traveled.