



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> Adam S. Hall	<b>Project Number</b>  31585
<b>Project Title</b> Electrostatic Fields and Arcs	
<b>Objectives/Goals</b> Objective: The purpose of my project is to find out whether or not an electric discharge will disrupt an electrostatic field. Also, I wanted to find the correlation between relative humidity and approximately how much voltage was yielded. <b>Abstract</b> <b>Methods/Materials</b> Materials and Methods: In order to do my project I used PVC, copper pipe, a brass knob, a gallon water bottle, aquarium line and valve, screws, a wooden base, an aluminum comb, and a large rubber band to make a Ramsden machine with an attachment for running water past the capacitor. I also made a discharge rod out of wiring with a rubber insulator and a spectrometer with a jar and cork, copper wire, a tin plate and thin aluminum foil. For the first part of the experiment I ran water past the capacitor to show the effects of the electrostatic field and an indicator as well. I charged up my machine and the water stream bent, and I then discharged my capacitor using my discharge rod. For the second part of my experiment I measured how much charge was relatively built up with my spectrometer and used an electronic meter to find the relative humidity in the air. <b>Results</b> Results: When the capacitor was discharged, the water stopped bending indicating that the electrostatic field had dissipated. Also, when the humidity was increased the machine did not vary much in the initial voltage but the amount of time it took for the energy to discharge was decreased. <b>Conclusions/Discussion</b> Conclusion: Discharge of an electrostatic field will lead to its dissipation. When the humidity rises, a capacitor loses its charge faster.	
<b>Summary Statement</b> The effects of ESD and relative humidity on an electrostatic field.	
<b>Help Received</b> Father has expertise in electronics and helped me build the Ramsden machine and Spectrometer. Mother helped put together board.	