



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Christopher R. D'Elia	Project Number J0711
Project Title Micro Dynamometer	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of my experiment was to build a small dynamometer that could measure the output power, torque, and RPM of a HO scale slot car.</p> <p>Methods/Materials I researched dynamometers to learn all the different methods and approaches to building them. I designed the dynamometer based on the principles of an electric dynamometer. I built the dynamometer to the specifications in my design. I tested the dynamometer with different cars and by adding a resistor to the motor. I recorded six sets of data. I graphed the data on a scatter chart and analyzed its trend. I compared my results to the standard behavior of electric motors.</p> <p>Results I built a dynamometer that is capable of measuring the power of a HO scale slot car.</p> <p>Conclusions/Discussion I concluded torque as a function of RPM, follows a polynomial curve, and power as a function of RPM, follows a higher order polynomial curve. The data should eventually drop off, but I did not have enough input voltage to prove this theory. In the future I will use more input voltage to the car, a different power supply, and a more sensitive scale. I will experiment more with the effect of loading the motor with a resistor.</p>	
Summary Statement My project reflects the process of building a device to accurately measure and confirm the torque and output power of a slot car.	
Help Received I received assistance from my father. He helped to machine the base and supports. All of the machine work was done to my specifications and according to the drawings that I made. I am in the process of learning to use a mill and a lathe, but I have not yet received permission to use these machines.	