



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) H. Aidan Jolliff	Project Number J0109
Project Title The Effects of Magnetic Fields on Water Flow	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This experiment measures the affects of a strong stationary magnetic field on water running through a confined space.</p> <p>Methods/Materials A plastic champagne glass was placed in a wooden fixture between two sets of cobalt magnets that produced a 200 (+/- 10) gauss magnetic field around and through the stem. A stopwatch was used to time the flow of measured amounts of distilled water, tap water and saltwater through the stem. The experiment was then repeated for each manipulated (water) variable with no magnetic field present. The flow rate was measured seven times for each test solution and each test condition on three different days.</p> <p>Results The raw data for each manipulated variable was plotted using a scatter gram. After discarding the two outlying data points for each variable, the five remaining closest data points were averaged to produce a smoothed data set for each variable.</p> <p>The smoothed data showed the saturated saltwater solution in the presence of the 200 gauss magnetic field had the slowest rate of flow. The distilled water with no magnetic field present had the fastest flow, which confirmed the original hypothesis that a strong magnetic field would affect the flow rate.</p> <p>Conclusions/Discussion Electrical measurements of the solutions showed the saturated salt solution would conduct a current in excess of 500 milliamps. The distilled water showed no measurable current flow, confirming the conclusion that the more ions and salts in the water, the greater the effects of the magnetic field.</p> <p>The underlying physics of the observed water flow phenomena are still under investigation.</p>	
Summary Statement This experiment investigates the affects of a strong magnetic field on the flow of water in a confined space.	
Help Received My grandmother got me interested in magnetic fields, bought materials, helped me design the holding fixture, and showed me how to use a spread sheet to record and plot the data. Dr. James Clemmons of the Aerospace Corp. measured the magnetic gauss across the stem of the glass as it was held in the test	