

## CALIFORNIA STATE SCIENCE FAIR

## 2001 PROJECT SUMMARY



**Your Name** (List all student names if multiple authors.)

**Amy G. Redel**

**Science Fair Use Only**

**S0617**

**Project Title** (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9)

**How can the strength of electromagnets be controlled?**

**Division**

Junior (6-8)  Senior (9-12)

**Preferred Category** (See page 5 for descriptions.)

**6 - Electricity & Electronics**

**Abstract** (Include Objective, Methods, Results, Conclusion. See samples on page 14.)

Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.

**Objective:** My project explores how the strength of electromagnets can be controlled by changing the wire windings, the voltage, and the amperage.

**Method:** Three magnets were made with different numbers of windings. three battery arrays were combined with the three magnets to make nine combinations. To hold items in certain places a test platform was constructed. An ampmeter was used to prove that the different battery arrays were indeed changing the voltage and amperage. The strength of the nine combinations was tested with a tension scale with four runs each. The data was averaged.

**Results:** The windings were the most important factor for the electromagnet's strength, followed by the voltage then the amperage.

**Conclusion:** the strength of electromagnets can be controlled by varying the wire windings, the voltage, and the amperage.

**Summary Statement** (In one sentence, state what your project is about.)

This project tests how an electromagnet's strength is influenced by changes in wiring construction, voltage, and amperage.

**Help Received in Doing Project** (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4.

My dad helped with wiring and platform construction.