



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Joshua C. Leighton	Project Number J1522
Project Title Radiation	
Objectives/Goals The goal of this project was to determine if I could identify an unknown source of radiation (Coleman lantern mantles) as emitting alpha, beta, or gamma radiation. In addition to this I performed experiments on what blocks radiation, whether thickness matters when blocking radiation, how magnets affect radiation, and to validate the inverse square law.	
Abstract I constructed a Geiger Counter that I enhanced with a digital counter. I obtained alpha, beta, and gamma radiation disk sources that I used in my experiments. Using a variety of different materials placed between the radioactive source and the Geiger tube, I performed experiments to discover what materials block radiation. I then used this information to determine what type of radiation Coleman lantern mantles emit.	
Methods/Materials I constructed a Geiger Counter that I enhanced with a digital counter. I obtained alpha, beta, and gamma radiation disk sources that I used in my experiments. Using a variety of different materials placed between the radioactive source and the Geiger tube, I performed experiments to discover what materials block radiation. I then used this information to determine what type of radiation Coleman lantern mantles emit.	
Results Any material almost completely blocked alpha radiation. Beta radiation was blocked better by thick or metallic materials. Almost nothing blocked gamma radiation.	
Conclusions/Discussion Using the information recorded when blocking radiation I was able to estimate that the Coleman lantern mantle gave off about 18% alpha, 70% beta, and 12% gamma radiation.	
Summary Statement My project is about the properties of radiation.	
Help Received Dad helped troubleshoot Geiger counter, reviewed my report, and asked leading questions occasionally; Larry Web of Spectrum Techniques lent me the radiation sources.	