CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
J1512

Project Title
Sunspots

Abstract

Objectives/Goals
The goal of my project was to determine if I could accurately calculate the sun's rotational period by observing the position of sunspots over time. I predicted I could achieve an accuracy of 0.27 percent.

Methods/Materials
Using a 6 inch reflector telescope with a solar filter, I made daily observations of sunspot locations. SOHO satellite pictures were also used to supplement my obsevations. I created a longitude grid that I superimposed over the images. Using this grid, I calculated the daily movement of the sunspots with an accuracy of +/- 1 degree. I used a proportion equation to extrapolate solar period based on the degrees of sunspot movement during the observational time.

Results
Four sunspots were used to determine rotation period during one 48 hour period. I determined that sunspots A, C,and D period of rotation to be 26.7 days. Sunspot B period of rotation was 25.7 days. Comparing these values to those obtained from NASA (25.4 days)I determined my accuracy to be 5.1 percent and 1.1 percent. respectively.

Conclusions/Discussion
The hypothesis of 0.27 percent accuracy was not supported by observational data. Percent accuracies of 1.1 to 5.1 were obtained. This was a valuable project for me because required me to apply my math skills to a real life sitation. I was really excited to see how my observation diagrams matched the images of the SOHO satellite.

Summary Statement
Using daily sunspot observations, I attempted to accurately determine the sun's rotational period.

Help Received
School provided all materials needed for project. Mom helped edit. Dad reviewed mathamatical equations.