CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J1906

Project Title
Moon Mass: To Wobble or Not to Wobble?

Abstract

Objectives/Goals
The objective is to determine how the mass of a moon affects its wobble. I hypothesize that if the mass of the moon increases, the moon will wobble more in its orbit.

Methods/Materials
1. Find a planetary simulation computer program
2. Alter it so that it can do the following:
a. Adjust the mass of the moon (this is the independent variable
b. Can record the distance of the moon from the earth
c. Has the same (starting) mass and everything else as the moon, earth, and sun (independent)
d. Allows you to see the universe centered on the earth, moon or sun
3. Run the computer program multiple times, adjusting the mass of the moon.
4. Map data into excel and graph to visualize the wobble over time.

Results
The wobble of the moon increased as the mass increased. When the mass of the moon exceeded the mass of the planet, the moon no longer orbited the planet, it escaped its orbit.

Conclusions/Discussion
As the mass of a moon increases it wobbles more. Eventually, if a moon becomes too massive, it will leave its planetary orbit completely.

Summary Statement
I created a planetary simulation program to discover how a moon's mass affects its wobble.

Help Received
My cousin, Josh Herbach, helped design the planetary simulation program.