CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)

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Project Number

22094

Project Title

Doe the Universal Gravitation Constant Really Exist?

Abstract

Objectives/Goals

The whole objective or purpose of this experiment was to see if I could witness the gravitation attraction gradient between two masses without using high-tech and laboratory apparatus (Third Law of Newton)

Methods/Materials

The materials that I used were a foam bar, about 3 meters of nylon monofilament, 2 varying dense test masses (that revealed their attraction tendencies), 2 support masses (to balance bar),insulated phone wire, electric tape, a ladder, a tuna fish can, and two equal aluminum pieces.

Results

The principle behind the torsion balance scale is fairly simple. By suspending a balance arm from an elastic string and placing much denser test masses/supports upon it, the downward pull of gravitation is concentrated on the test masses, leaving the bar free to oscillate amidst the two outer attraction masses (revealing that gravitation constant does actually exist). Although the moment of equivalent gravitation occurs for only a few split seconds, its action is truly magnificent. The dimensional analysis of the water brake (attached onto torsion balance scale) affects the performance of the attraction gradient, because the ratio of the radius : height can add/lessen the degree of stability provided upon the scale. Various support masses give off different results because different objects are composed of materials with varying densities.

Conclusions/Discussion

With the establishment of the attraction gradient, Einstein#s relativity theorem or that gravity is a fundamental consequence of space and time can be proven to be true. The torsion balance scale enables the viewer to see the true effects of micro-gravity without stepping into deep space/ or a vacuum. The invention interested me because it was literally about bending space time, and the framework concept of our universe. Although there is really no way to measure the exact gravitation constant (because of the minuteness of the force) it is most visible to view the horizontal oscillations of the bar. It is in this fashion that one can see the correlation between the density and attraction gradient between various objects.

Summary Statement

It was about proving the existence of the Univeral Gravitation Constant in the most simple method possible(Torsion Balance Scale)

Help Received

No one

Preliminary