CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
22215

Project Title
Tuning an Instrument Using Beats

Abstract

Objectives/Goals
I wanted to learn how to tune my instrument withouth the use of an electric tuner. If two frequencies overlap, they will produce loud bursts of sound where two peaks match. I used these to see if the frequencies were closer to being in tune when the beats were closer together or farther appart.

Methods/Materials
I used a stringed instrument called a fretted dulcimer to find the answer to my question. On the dulcimer I used, there were two strings that were exactly the same. These, I tuned to the same note. I used an electric tuner to tune one of the strings slightly down, while leaving the other the same. This produces the off frequency. I measured the amount of beats that occured in five seconds. I continued down until I reached the next note

Results
I have found that the two strings are closer to being in tune if the beats are farther appart. Also when the frequencies are going away from each other, they go higher rapidly, but when they begin to go down, they go down very slowly.

Summary Statement
My project is about using sound frequencies to tune an instrument.

Help Received
Dad helped make charts and graphs; Ms. Rasmussen got board; Mom provided instruments and tuner