CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
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Project Number
J1612

Project Title
String Systems in Musical Instruments

Abstract

Objectives/Goals
To generate unique sounds with string systems, and to analyze their wave form and spectrum graphs

Methods/Materials
Using an old guitar, guitar string, wood, and tuning keys, I created an instrument capable of accomodating different string systems. (to clarify about the string systems, a normal guitar string is attached at 2 endpoints. a different string system would be to have the guitar string branch off into 3 or more endpoints). I recorded audio samples of each string system (2,3,4,& 5 endpoints) and analyzed the results with sound editing software.

Results
The sound waves of the normal guitar string had a very distinct wave form pattern. Its sound was very bright. The more endpoints you added onto the string created a more muted sound, causing making it sound similar to that of a drum. With the more endpoints, the wave form pattern's amplitude died down much more quickly than the string with 2 endpoints.

Conclusions/Discussion
My data showed that as you add more endpoints onto the guitar string, the more muted the sound of the guitar would be. Aside from that, the sound died down significantly quicker than the normal guitar string. Overtones were also produced, creating a sound similar to that of a drum.

Using the sounds generated by the different string systems, it is definitely possible to influence culture, as well as to impact music therapy.

Summary Statement
My project analyzes the differences in sound waves of different string systems (instrument strings with 2 or more endpoints).

Help Received
I received help in modifying the guitar so as not to completely damage the instrument and make it unfunctional for my uses.