

# POSTER SESSION

**Room: Troutt Theater – Lower Lobby**

**Time: 4:00 – 5:00 PM**

## **"Vocal Spectrum Analyzation"**

Rachael Aull, Wes Burkhart, Eric Westmaas

Faculty Advisor: Dr. Scott H. Hawley

Through our project we will be analyzing the frequency versus time readings for four vocalists of differing training backgrounds. Our test subjects include one male and one female Classical Voice major along with one male and one female Commercial Voice major. We will be analyzing the spectrum of each vocalist's vowel sounds, one familiar piece and one impromptu piece. In order to carry out these measurements, our team recorded each chosen test subject one at a time, performing the tasks as described. Separate recorded tracks will be placed through the Smaart Acoustic Tools program to observe and analyze the spectrographic readings relevant to these performances. Our expectations are to find apparent differences between the familiar and impromptu pieces and hope to find a trend between our test subject's vowel recordings.

Discipline: Physics

## **"The effect of frequency on the amplitude response of a crystal glass"**

Stephen Browne, Tom Muellner, Lindsay Woodward

Faculty Advisor: Dr. Scott H. Hawley

This is a study in resonance. For our project, we determine the amplitude response of a glass based upon the frequency we drive it with. We keep the amplitude of the driving force constant and only adjust the frequency. Along the way we determine the Q value for the glass, which is a measure of the damping present in the system. Finally we determine the amplitude and frequency necessary to drive the glass at in order for it to break.

Discipline: Physics

## **"Frequency Analysis: Guitar Harmonics"**

David Kincaid, Iaian Smallwood, Allen Brown

Faculty Advisor: Dr. Scott H. Hawley

We investigated the harmonic content of the guitar, by playing several different types of notes on the same

frequency and recording the tones. We performed Fourier analysis on the recordings and to investigate the similarities and differences in the harmonic content of the tones. The purpose of the project is to better understand how different techniques such as tapped and pinched harmonics affect the sounds produced on a guitar.

Discipline: Physics