Detecting Earthquakes Using a Two-Dimensional Pendulum

Edelkind, Ephram (School: Manatee High School)

The goal of my project was to determine if I can detect the epicenter of an earthquake using lissajous patterns created by a two dimensional pendulum. By doing so, scientists would be able to detect the fault line that caused the earthquake. I constructed the pendulum by attaching small LED's to a weight. This was attached to a bike wheel rim attached to the ceiling. I used a camera with a shutter speed of 30 seconds to record the images made by releasing the pendulum at a set starting point. This was all done in pitch blackness over a floor based grid work made with UV sensitive tape, illuminated with a UV light. After doing this five times, I used an impact device to vibrate the pendulum set up at five different points, five times for each point. I recorded the angled created by the pendulum produced lissajous patterns and observed for different degrees. However, my results were fairly similar between each trial. A noticeable difference could not be found. My hypothesis was incorrect as I was unable to detect the epicenter of the vibrations.

Awards Won: