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*The Phenomenon of Oscillons in Vertically Vibrated Granular Material*

This research experiment was conducted to determine the best frequencies, amplitudes, and shapes that form the most detailed oscillon patterns in granular material. No previous research has proven whether granular material forms Faraday waves or what shape of granular material is best used to form these patterns.

Sand and three different sizes of salt were filled separately into a round container attached to a mechanical vibrator and digital function generator. The granular materials were tested at amplitudes between 0.1 and 0.4 millimeters. The frequencies were altered from 0 to 40 hertz. A camera with the ability to take 40 shots per second was set up to capture the patterns formed in the granular material. Equations were found to describe the surface wave phenomenon.

Through the pictures captured and the calculated equations, it was proven that round shaped granular material forms more detailed oscillon patterns at lower amplitudes and frequencies than the cubic shaped granular material.