

Abstract Submitted
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Effects of Shear Thickening Properties in Oscillating Non-Newtonian Fluids¹ ROXANNE ABLE, YOGI PATEL, JON BOUGIE, Loyola University Chicago — We study the behavior of a shear-thickening, non-Newtonian fluid when shaken at a variety of accelerational amplitudes and frequencies. Mixing corn starch with water, using cesium chloride to match density and prevent separation, produces a fluid with shear thickening properties. When a thin layer of this fluid is vertically oscillated, it can produce Faraday waves as well as other phenomena that are characteristic of non-Newtonian fluids, such as stable holes and time-dependent, delocalized regions that grow from small initial disturbances in the fluid layer. We investigate how the concentration of corn starch (and as a result the shear-thickening properties of the fluid) affects which phenomena are observed, and we demonstrate that this concentration does have a significant effect on the fluid behavior.

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