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Fluid Surface Deformation by Objects in the Cheerios Effect KHOI NGUYEN, MICHAEL MILLER, SHREYAS MANDRE, Brown University, MANDRE LAB TEAM — Small objects floating on a fluid/air interface deform of the surface depending on material surface properties, density, and geometry. These objects attract each other through capillary interactions, a phenomenon dubbed the "cheerios effect." The attractive force and torque exerted on these objects by the interface can be estimated if the meniscus deformation is known. In addition, the floating objects can also rotate due to such an interaction. We present a series of experiments focused on visualizing the the motions of the floating objects and the deformation of the interface. The experiments involve thin laser-cut acrylic pieces attracting each other on water in a large glass petri dish and a camera set-up to capture the process. Furthermore, optical distortion of a grid pattern is used to visualize the water surface deformation near the edge of the objects. This study of the deformation of the water surface around a floating object, of the attractive/repulsive forces, and of post-contact rotational dynamics are potentially instrumental in the study of colloidal self-assembly.

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