

Abstract Submitted
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Dancing Droplets NATE CIRA, MANU PRAKASH, Stanford University — Inspired by the observation of intricate and beautifully dynamic patterns generated by food coloring on corona treated glass slides, we have investigated the behavior of propylene glycol and water droplets on clean glass surfaces. These droplets exhibit a range of interesting behaviors including long distance attraction or repulsion, and chasing/fleeing upon contact. We present explanations for each of these behaviors, and propose a detailed model for the long distance interactions based on vapor facilitated coupling. Finally we use our understanding to create several novel devices which: passively sort droplets by surface tension, spontaneously align droplets, drive droplets in circles, and cause droplets to bounce on a vertical surface. The simplicity of this system lends it particularly well to application as a toy model for physical systems with force fields and biological systems such as chemotaxis and motility.

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