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Attraction between charged colloidal spheres at oil-water interface CHUAN ZENG, HUGO BISSIG, ANTHONY DINSMORE, Department of Physics, University of Massachusetts Amherst — The behavior of micron-sized, charged-stabilized colloidal spheres confined at oil-water interface was studied using microscopy. Aggregates of colloidal particles were observed, suggesting an attractive capillary force arising from electrostatic stress on the interface. We report measurements of a long-range attraction between carboxyl-modified polystyrene spheres (radius $\sim$ 1 micron) at the interface between 1,1,1-trifluoroheptan-2-ol and water using image analysis and particle tracking. The interaction between two isolated spheres was measured and compared to recent theoretical models. We also measured the interaction of single particles with large clusters as well as the interactions between clusters. We found acceleration due to the capillary attraction and a complex angular dependence owing to the anisotropy of the meniscus around a cluster.
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