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Pair Interaction of microparticles at oil-water interfaces CHUAN ZENG, ANTHONY DINSMORE, University of Massachusetts — We confined microparticles at fluid-fluid interfaces and measured the interaction between them. Aggregates of colloidal particles were observed, suggesting an attractive capillary force at long range, which cannot be explained by gravity. We report measurements of the interaction between carboxylate-modified polystyrene spheres (radius $\sim$ 1 micron) at the oil-water interface using image analysis and particle tracking. The interaction between two isolated spheres was measured from particle trajectories and analyzed through the Markovian Dynamics Extrapolation method developed by J.C. Crocker and D.G. Grier. Different choices of oil (1,1,1-trifluoroheptan, silicone oil, decahydronapthalene, etc.) and various sample geometries were explored. The role of surfactants will be discussed. We acknowledge support from NASA through the Fluid Physics program (NRA 02-OBPR-03-C).

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