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Droplet Rearrangement in a Sheared Dense Emulsion[1] S.K. DUTTA, D.L. BLAIR, Department of Physics, Georgetown University — The constituent particles of disordered colloidal dispersions compressed above the threshold for jamming flow with highly heterogeneous dynamics. Though this leads to the rich viscoelastic behavior that makes these materials so widespread, a clear description at the microscopic level has yet to emerge. We investigated the non-affine motion in a dense oil-in-water emulsion using a confocal rheometer, which can image individual droplets while applying a precisely controlled shear to the system. From these images, we identify the very fast rearrangements that accompany flow and determine the spatial and temporal distributions of the events as a function of the droplet volume fraction. In addition, it is possible to characterize the regions of the emulsion which are most susceptible to rearrangement.

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