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Three Dimensional Observation of Force Chain Formation in Emulsions THEODORE BRZINSKI, CHARLOTTE HOLLINGER, RAUL GONZALEZ, ERIC WEEKS, Emory University, Department of Physics — The spatially heterogeneous distribution of forces may be a common feature of jammed granular, foam and emulsion systems. This is thought to be due to the presence of force chains, structures of particles, droplets or bubbles which bear the bulk of a force exerted on the system. In emulsions, adjacent droplets exert forces on one another, which results in the deformation of droplet interfaces. We use fast laser-scanning confocal microscopy to observe the local deformations of each droplet in a sample in three dimensions, in order to visualize the force chains. Furthermore by placing jammed emulsions in a sheer-cell we observe the dynamics of force chain formation in real-time.

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