Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Avalanches of Rearrangements in 2D Emulsion Hopper Flow XIA HONG, KENNETH DESMOND, DANDAN CHEN, ERIC WEEKS, Emory University, WEEKS' LAB AT EMORY UNIVERSITY TEAM — We conduct experiments with a quasi-two-dimensional binary emulsion flowing through a hopper. Our samples are oil-in-water emulsions confined between two close-spaced parallel plates, so that the droplets are deformed into pancake shapes. In this system, there is only viscous friction and no static friction between droplets. By imaging the droplets during flow, we observed T1 events, which are topological rearrangement events when droplets exchange neighbors. Avalanche like flow behavior has been found by controlling the flow velocity and area fraction. We study the statistics of rearrangements as a function of the control parameters and observe a fairly smooth transition from avalanche-dominated flow to continuous flow.

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Date submitted: 15 Nov 2013 Electronic form version 1.4