Abstract Submitted
for the DFD05 Meeting of
The American Physical Society

Flows and Interface Deformations Driven by Light Scattering ROBERT SCHROLL, WENDY ZHANG, James Franck Institute, University of Chicago, RÉGIS WUNENBURGER, ALEXIS CASNER[1], JEAN-PIERRE DELVILLE, Centre de Physique Moléculaire Optique et Hertzienne, Université Bordeaux I — Recent experiments reveal a novel jetting instability in a micellar fluid system near a second-order phase transition [Casner and Delville, Phys.Rev. Lett.**90** 144503]. When a horizontal interface between the immiscible phases is illuminated by a laser from above at large power, a shape transition occurs. A narrow jet of liquid from the upper layer is propelled into the lower layer, eventually breaking up into droplets. We show the net transport of liquid across the interface results from a flow driven by light scattering off the density fluctuations. When the interface is illuminated from below, the light-driven-flow creates a large-scale hump. We calculate the hump shape and show it agrees well with experimental measurements.

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Date submitted: 11 Aug 2005 Electronic form version 1.4