Abstract Submitted
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Kelvin-Helmholtz evolution in subsonic cold streams feeding galaxies[1] ADRIANNA ANGULO, S. COFFING, C. KURANZ, R.P. DRAKE, S. KLEIN, M. TRANTHAM, Univ of Michigan - Ann Arbor, G. MALAMUD, Nuclear Research Center — The most prolific star formers in cosmological history lie in a regime where dense filament structures carried substantial mass into the galaxy to sustain star formation without producing a shock. However, hydrodynamic instabilities present on the filament surface limit the ability of such structures to deliver dense matter deeply enough to sustain star formation. Simulations lack the finite resolution necessary to allow fair treatment of the instabilities present at the stream boundary. Using the Omega EP laser, we simulate this mode of galaxy formation with a cold, dense, filament structure within a hotter, subsonic flow and observe the interface evolution. Machined surface perturbations stimulate the development of the Kelvin-Helmholtz (KH) instability due to the resultant shear between the two media. A spherical crystal imaging system produces high-resolution radiographs of the KH structures along the filament surface. The results from the first experiments of this kind, using a rod with single-mode, long-wavelength modulations, will be discussed.

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