Abstract Submitted
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**Experiments to study Kelvin-Helmholtz evolution in subsonic cold streams feeding galaxies on the Omega-EP**[1] A. ANGULO, S. COFFING, University of Michigan - Ann Arbor, G. MALAMUD, Nuclear Research Center, Negev, Israel, S. KLEIN, M. TRANTHAM, C. KURANZ, University of Michigan - Ann Arbor — 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. Cosmological-scale simulations lack the finite resolution necessary to allow fair treatment of the instabilities present at the stream boundary. Therefore, hydrodynamic scaling analysis is established between the cosmological system and an experimental analogue. Then, using the Omega EP laser, we create 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 this series of experiments using a rod with single-mode, long-wavelength modulations, will be discussed.

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