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High-resolution imaging of the Rayleigh-Taylor Vortex Breakdown[1] ADRIANNA ANGULO, University of Michigan, SABRINA NAGEL, HARRY ROBEY, CHANNING HUNTINGTON, GARETH HALL, KUMAR RAMAN, JASON BENDER, CHRISTINE KRAULAND, Lawrence Livermore National Laboratory, CAROLYN KURANZ, University of Michigan — The Rayleigh-Taylor instability (RTI) is a well-known, extensively studied, hydrodynamic instability in High Energy Density Systems that arises in inertial confinement fusion and supernovae explosions. Although the RTI is heavily studied, the structures produced by simulations at late times have never been experimentally observed. Previous experiments conducted at the National Ignition Facility (NIF) utilized diagnostics with insufficient spatial resolution to observe the fine-scale structure that is predicted to occur along the RT spikes. The Crystal Backlighter Imager (CBI) produces an x-ray radiograph of the fine-scale features expected in these RT unstable systems with unprecedented clarity. By adapting a well-characterized RT- unstable NIF platform to accommodate the CBI, the resolution of the system radiographed has already improved twofold. Continued efforts to optimize the platform to highlight the fine-scale features along the RT spike tip are presently underway. The simulations and results from the first experiments of this kind will be discussed.

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