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Temporal Evolution of Directly Driven Hydrodynamic Jets Relevant to Astrophysics S. SUBLETT, J.P. KNAUER, I.V. IGUMENSHCHEV, A. FRANK, D.D. MEYERHOFER, Laboratory for Laser Energetics, U. of Rochester — A hydrodynamic jet is formed when a strong laser shock drives material from a metal plug in a dense, high-Z washer through its hole into a low-density, foam ambient medium. The jet is about ten times as dense as the medium, a ratio important for scaling to astrophysical phenomena. The plug material and backlighter x-ray energy are varied to radiograph either the jet's core or its interaction with the ambient medium. Temporal evolution of the lateral expansion of the bowshock, contact discontinuity, and Mach disk is also tracked at several times during the evolution. The mass of the jet is determined. Quantitative comparisons with simulations are presented. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-92SF19460.

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