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Design of Jet-Driven, Radiative-Blast-Wave Experiments for Omega EP[1] R. PAUL DRAKE, University of Michigan, J.P. KNAUER, Laboratory for Laser Energetics, University of Rochester — We discuss the design of jet-driven, radiative-blast-wave experiments for the Omega EP (EP) laser facility. In experiments motivated by astrophysics, plasma jets have been produced by a number of research teams on a variety of laser and z-pinch facilities. Among those that have driven a bow shock into an ambient medium, none have yet been fast enough to create strong radiative effects in the ambient medium. This becomes possible on EP because of the large amount of energy available (7.5 kJ in 1 ns or 19.5 kJ in 10 ns) when three EP beams are used to drive the experiment. We describe the design and simulations of such experiments for EP. The basic approach is to shock the jet material and then accelerate it through a collimating hole and into a Xe ambient medium. We identify issues that must be addressed through experimentation or further simulations in order to field successful experiments.

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