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OSIRIS Modeling of Transport Experiments on Omega EP[1] J. MAY, UCLA, T. YABUUCHI, C. MCGUFFEY, H. SAWADA, UCSD, M.S. WEI, R.B. STEPHENS, General Atomics, C. STOECKL, University of Rochester, W.B. MORI, UCLA, H.S. MCLEAN, P.K. PATEL, LLNL, F.N. BEG, UCSD — In recent experiments on the Omega EP laser, a high intensity laser beam ($eA/m_ec > 1$) is focused onto a gold foil, generating relativistic electrons. Behind the Au foil is a layer of plastic through which the electrons are allowed to transport, in one of three states: solid density and cold; low density foam ($200mg/cm^3$) and cold; or the same foam shock ionized by a drive laser incident before the accelerating beam. On the far side of the CH from the gold is a copper foil, and electron fluence is measured by recording the k-α from that foil. Results show an order of magnitude decrease in Cu k-α when the CH layer is pre-ionized compared to either a low or high-density cold CH. Simulations using the PIC code Osiris show a variety of effects which inhibit electron transport. Primary among these is a pressure gradient at the Au-CH interface leading to an electrostatic field, and a magnetic field layer developing in the same region due to the curl of that electric field. By increasing the density of the CH region we are able to damp these effects, and we believe this density response explains the experimental result.

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