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Effect of pre-pulse generated plasma on short-pulse laser-cone-wire interactions* R.J. FAEHL, R.J. MASON, R.C. KIRKPATRICK, RAC, T. YABUUCHI, M.S. WEI, F.N. BEG, UCSD, R.B. STEPHENS, GA — Experiments on ∼10 picosecond long pulses were conducted at the Omega EP laser. The presence of a pre-pulse containing over 300 mJ resulted in the formation of extensive plasma within the cone, extending out to over 100 microns from the cone apex.[1] We have conducted computational investigations of the effect of the plasma with the 2D implicit hybrid simulation code ePLAS, implemented to study short-pulse laser interactions with cone-wire targets. The code deposits laser light near critical density, and tracks resultant megavolt "hot" particle-in-cell (PIC) electrons through an ionized copper or gold target material or in the surrounding vacuum. Dynamic ionization of the initially cold metallic target components can dramatically alter the transport of hot electrons through and around the targets. This ionization evolution has been modeled both parametrically and through a variable mean atomic number Z from analytic models. The use of Sesame Tables is also being explored. Direct comparisons are drawn between time-dependent transport in targets with and without the presence of a pre-pulse "blow-off" plasma. 1. R. J. Mason, et al. Bull. Am. Phys. Soc. **53**, 152 (2008).

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