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Ionization and Z Effects in Cone Wire Experiments* BRIAN CHRISMAN, TOSHINORI YABUUCHI, MINGSHENG WEI, TAMMY MA, FARHAT BEG, University of California, San Diego, YASUHIKO SENTOKU, University of Nevada, Reno, PRAVESH PATEL, HARRY MCLEAN, Lawrence Livermore National Laboratory, RICHARD STEPHENS, General Atomics — In cone-wire experiments, ultra-intense lasers ($>10^{18}$ W/cm^2) are focused at the tip of a cone with a trailing wire attached in order to characterize the cone as a hot electron source for Fast Ignition. Laser pre-pulse simulations predict preformed plasma inside the cone with which the main, ultra-intense pulse interacts. For high Z cones, ionization and Bremsstrahlung significantly alter densities and temperatures of the plasma within half a picosecond. This changes the characteristics of hot electrons generated. The PICLS Particle-in-Cell code has been used to study above-mentioned effects. The model includes laser absorption, dynamic ionization, radiative losses, and particle collisions. Results of PICLS investigations of Z dependence show the dynamics of ionization and Bremmstrahlung within the cone's preformed plasma are complex and must be included when modeling high Z cone targets. *This work performed under the auspices of the US DOE by LLNL under Contract DE-AC52-07NA27344 and DE-FG-02-05ER54834(ACE).

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