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2D ANTHEM simulation of electron transport with B-fields in compressed cone-guided fast-ignition targets[1] R.J. MASON, Los Alamos National Laboratory — Recent experiments have reported a significant increase in the neutron yield from compressed CD targets exposed to a 1.06 μm short pulse heating laser through an attached gold cone. The cone permits laser penetration through the ablation cloud to greater depths toward the target core. We have studied this scenario with the 2D implicit PIC/hybrid code ANTHEM for core densities near 1.8 x 10^{25} electrons/cm^3 (200 g/cm^3) and picosecond laser intensities $\geq$ 4 x 10^{19} W/cm^2. The laser deposits on the inside tip of the cone. Some hot electrons are locked on its inner surface by magnetic fields, but most stream into the core and surrounding cloud, filling them to a hot electron density beyond and up to critical. The cold return speed can become relativisitic in the cloud. The hot electron range dominates control of the core temperature, which approaches experimental values for some drag models and some geometries. Much higher temperatures can be achieved with vacuum-insulated nested cones, and heater wavelengths $\leq$ 0.35 μm.

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