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Enhanced proton emission and hot electron dynamics inside Cu and Au flat-top cone (FTC) targets SANDRINE GAILLARD, K. FLIPPO, J. WORKMAN, D.S. MONTGOMERY, B.J. ALBRIGHT, J.A. COBBLE, J.C. FERNANDEZ, D.C. GAUTIER, B.M. HEGELICH, J.L. KLINE, S. LETZRING, L. YIN, Los Alamos National Laboratory, T.E. COWAN, J. RASSUCHINE, Forschungzentrum Dresden, Y. SENTOKU, University of Nevada, Reno, N. VUTI-SALCHAVAKUL, Ohio Wesleyan University — 10 μm thick Au and Cu FTC targets were shot recently at LANL on the Trident laser at 80-100 J, $\sim$600 fs and $\sim$5x10^{19}W/cm^2. These initial results are compared to previous experiments on Trident at $\sim$20 J and $\sim$1x10^{19}W/cm^2 using similar Au FTCs which yielded higher conversion efficiencies (4.5%) and proton energies (30 MeV) compared to 15 μm Au flat foils (0.75%, 19 MeV) [K. A. Flippo *et al.*, PoP **14** (2008)]. To elucidate the physics of electron transport and proton beam enhanced emission, Cu-Kα imaging and spectroscopy are used to observe the laser absorption and electron heating, and the Cu FTCs are compared to similar funnel-only cones resulting in an enhancement in the electron density toward the cone tip [J. Rassuchine *et al.*, PRL submitted (2008)].

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