Abstract Submitted
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Enhanced Isochoric Heating in High Contrast Laser-Nano-Cone Interactions T.E. COWAN, University of Nevada, Reno, J. RASSUCHINE, E. D'HUMIERES, Y. SENTOKU, UNR, S. BATON, P. GILLOU, M. KOENIG, J. FUCHS, P. AUDEBERT, LULI-Ecole Polytechnique, France, R. KODAMA, M. NAKATSUTSUMI, T. NORIMATSU, ILE-Osaka, Japan, D. BATANI, A. MORACE, R. BEDAELLO, University of Milano, INFM, Italy, L. GREMILLET, C. ROUSSEAUX, CEA, Bruyères-le-Châtel, France, F. DORCHIES, C. FOURMENT, J.J. SANTOS, CELIA, Bordeaux, France, S. HANSEN, LLNL — We discuss the interaction of very high-contrast high-intensity laser pulses with sharp-tipped, nanofabricated Cu cone targets (see [1]), using frequency doubled light at the LULI 100 TW laser (λ=0.53 um, I=4x10^{18} W/cm^2). Previous work at 1ω showed that pre-formed plasma, due to ASE, degraded the laser-cone coupling. At 2ω, high-resolution spectroscopy of Cu K$_\alpha$ emission shows high charge states, implying peak temperatures of up to 400 eV, comparable to the smallest reduced mass targets (50 μm dia x 20 μm thick). This implies a new confinement mechanism which, from 2D collisional PIC simulations, is due to self-generated resistive magnetic fields (up to 10 MG) which confine the hot electrons to the tip region of the cone. Supported by Access to Research Infrastructures in the EU Sixth Framework Programme (contract RII3-CT-2003-506350, Laserlab Europe), and UNR DOE/NNSA grant DE-FC52-01NV14050. [1] Y. Sentoku *et al.*, Phys. Plasmas, **11** 3083 (2004).

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