Abstract Submitted
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PIC Modeling of Preplasma Effect on Fast Electron Generation and Transport in Cone-Wire Target[1] R. MISHRA, UCSD, T. YABUUCHI, Osaka University, B. QIAO, UCSD, M.S. WEI, GA, H. SAWADA, UCSD, Y. SENTOKU, UNR, R. STEPHENS, GA, H. MCLEAN, P. PATEL, LLNL, F. BEG, UCSD — Collisional PIC simulations, using PICLS, are used to model an OMEGA EPexperiment[2] with cone-wire targets where fast electron energy coupling through a Au cone into a Cu wire was found to be significantly reduced (∼7x) compared to Titan results with identical targets but 50x less energy in prepulse. Simulations with two different scale-lengths (L=3 &15 μm) preplasma demonstratesd that a larger scale pre-plasma significantly reduces the energy coupling from heating laser to the wire due to larger offset distance of critical density surface and also wider divergence of electrons. Using simulation electron's phase information near source, such as propagation angle and offset distance of source from Wire, a reduction factor in electron flux reaching the wire for L=3 &15 μm is estimated; which is consistent with flux arrived in the Wire. This factor is further used using realistic large preplasma and offset distance for EP experiment reproduces the experimentally observed energy coupling reduction. In addition, cone wall effect on the energy coupling to the wire is also investigated by comparing simulation in planar and cone geometries for these two preplasma scales.

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[2]T Yabuuchi *et al*, ICOPS 2010.

Rohini Mishra
University of California San Diego

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