Abstract Submitted
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MeV radiography source development using NIF-ARC and CPC targets[1] S. KERR, F. ALBERT, D. ALESSI, M. BOWERS, H. CHEN, G. COCHRAN, D. FITTINGHOF, G. GRIM, M. HAMAMOTO, D. KALANTAR, A. KEMP, O. L. LANDEN, N. LEMOS, A. MACKINNON, A. MACPHEE, D. MARTINEZ, A. PAK, L. PELZ, M. PRANTIL, D. RUSBY, D. SCHLOSSBERG, S. WILKS, G. J. WILLIAMS, W. WILLIAMS, Lawrence Livermore National Laboratory, M. HILL, Atomic Weapons Establishment — Kilojoule energy, picosecond duration lasers with intensity ~1x10^{19} W/cm^{-2} are promising drivers for MeV x-ray radiography [1]. Recent experiments using the NIF Advanced Radiographic Capability (ARC) laser and compound parabolic concentrator (CPC) targets [2] have reached effective intensities >1x10^{19} W/cm^{-2}, as inferred by measured hot electron temperatures, which is a >10x enhancement compared to flat targets. The x-ray source from 0.5mm thick Au foils has been systematically studied over a series of ARC shots, and its size, flux and spectrum characterized. The results and applications to MeV radiography will be discussed, and a planned demonstration of MeV radiography with ARC and CPC targets will be presented. [1] Courtois et al., PoP 2013 [2] MacPhee et al., submitted Optics Express 2019

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