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Hard X-ray and Hot Electron Environment in Vacuum Hohlraums at NIF* JOSEPH MCDONALD, L.J. SUTER, O.L. LANDEN, Lawrence Livermore National laboratory, J.M. FOSTER, AWE, Aldermaston, UK, J.R. CELESTE, J.P. HOLDER, E.L. DEWALD, M.B. SCHNEIDER, D.E. HINKEL, R.L. KAUFFMAN, L.J. ATHERTON, R.E. BONANNO, S.N. DIXIT, D.C. EDER, C.A. HAYNAM, D.H. KALANTAR, A.E. KONIGES, F.D. LEE, B.J. MACGOWAN, K.R. MANES, D.H. MUNRO, J.R. MURRY, M.J. SHAW, R.M. STEVENSON, T.G. PARHAM, Lawrence Livermore National laboratory — Time resolved hard x-ray images ($hv > 9$ keV) and time integrated hard x-ray spectra ($hv =$ 18-150 keV) from vacuum hohlraums irradiated with four 351 nm wavelength NIF laser beams are presented as a function of hohlraum size and laser power and duration. The hard x-ray images and spectra provide insight into the time evolution of the hohlraum plasma filling and the production of hot electrons. The fraction of laser energy detected as hot electrons (F_{hot}) is compared with previous measurements, explained by an empirical hohlraum plasma filling model, and compared to radiation-hydrodynamics simulations based on laser-plasma interaction theory. In addition, the significance of Au K-alpha emission and Au K-shell reabsorption observed in some of the bremsstrahlung dominated spectra is discussed. *This work was performed under the auspices of the U.S. Department of Energy by the University of California, Lawrence Livermore National Laboratory under Contract No. W-7405-ENG-48.

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