Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Modeling of L- and K-shell x-ray radiation from stainless steel wire arrays and X-pinch implosions on the 1MA pulsed power generator at UNR N.D. OUART, A.S. SAFRONOVA, V.L. KANTSYREV, U.I. SAFRONOVA, K. WILLIAMSON, G. OSBORNE, I. SHRESTHA, M.F. YILMAZ, D.A. FEDIN, T.E. COWAN, University of Nevada, Reno, C.A. COVERDALE, D.J. AMPLEFORD, B. JONES, C. DEENEY, Sandia National Laboratories, P.D. LEPELL, Ktech Corp. — Modeling of x-ray spectra from the implosion of stainless steel wire loads is challenging because of the overlapping contributions of L-shell spectra from the Fe and Ni ions. Nevertheless, it is a useful diagnostic because of the broad region of electron temperatures (0.2-2keV) corresponding to L- and K-shell radiation. L- and K-shell x-ray spectra have been collected from stainless steel single-wire, X-pinch, conical, and planar array experiments on the 1MA Zebra generator and have been analyzed in detail and compared. Non-LTE Fe, Ni, and Cr kinetic models have been developed to account for the K- and L-shell radiation from these ions. Two atomic data sets were employed and will be compared for the Fe model. The resulting plasma parameters from the axially-resolved L-shell and spatially-integrated K-shell spectra and their dependence on the load type will be discussed. Work supported by the DOE/NNSA under UNR grant DE-FC52-01NV14050, by Sandia National Laboratories under DOE contract DE-AC04-94AL85000, and in part by fellowship support from the National Physical Science Consortium with Sandia National Laboratories.

A.S. Safronova
University of Nevada, Reno

Date submitted: 24 Jul 2006 Electronic form version 1.4