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Charge balancing and identification of prominent spectral features of M-shell W plasmas G.C. OSBORNE, A.S. SAFRONOVA, U.I. SAFRONOVA, V.L. KANTSYREV, K.M. WILLIAMSON, I. SHRESTHA, University of Nevada, Reno, P. BEIERSDORFER, LLNL — Charge balancing and identification of prominent spectral features in M-shell tungsten between 3 and 9 Å has been performed for LLNL EBIT data collected at varying electron beam energies between 2.3 and 4.2 keV. Previous research [G.C. Osborne et al, RSI (2008, in press)] focused on the analysis of spectra corresponding to beam energies of 2.9 and 4.1 keV, while this paper mainly focuses on lower beam energy configurations. Diagnostic of these spectra is challenging due to numerous lower than Ni-like ionization stages within a relatively narrow region, so a procedure was developed utilizing a theoretical model for charge state balancing. Atomic data was calculated separately for transitions 3→4 and 3→5 from each ionization stage, including Co-Ge-like W ions using the HULLAC code. The synthetic spectra calculated at higher electron density as well as identified EBIT spectra then are used to identify spectral features and to determine charge balance of M-shell W spectra from Z-pinch plasmas produced on 1 MA Zebra generator at UNR. Work was supported by DOE under grant DE-FG02-08ER54951 and NNSA Coop. Agr. DE-FC52-06NA27588 and DE-FC52-06NA27586. Work at LLNL was performed under auspices of the DOE under contract DE-AC52-07NA2344.

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