Abstract Submitted
for the DAMOP18 Meeting of
The American Physical Society

High-resolution x-ray spectra of highly charged tungsten produced in an electron beam ion trap SAMUEL SANDERS, Clemson Univ, AMY GALL, Clemson University, HEMALATHA RUDRAMADEVI, Sri Venkateswara University, ROSHANI SILWAL, Clemson University, JOAN DREILING, YURI RALCHENKO, NIST, ENDRE TAKACS, Clemson University — Highly charged tungsten ions present in fusion devices require experimental data to fully characterize the plasma. We present high-resolution x-ray spectra of highly charged W in the wavelength range of 4.8 Å - 5.0 Å. Line identification was aided by simulated results from a non-Maxwellian collisional radiative model (NOMAD), where the strongest transitions arise from 3d-4f resonances. The W plasma was produced and confined in an electron beam ion trap, and the spectra were recorded with a high-resolution Johann-type Bragg-reflection x-ray spectrometer [1]. Electron beam energies ranging between 5.2 keV and 6.5 keV explored the variations in the spectral features for particular charge-state distributions. Coincident high-resolution EUV and broad-band x-ray spectra were also recorded to supplement the high-resolution x-ray measurements. We discuss the application of our results to plasma research, highlighting the particular benefits to fusion-plasma diagnostics. [1] Sanders et al., *Nuc. Instrum. Meth. B*, Submitted for publication (2018).

Samuel Sanders
Clemson University

Date submitted: 26 Jan 2018 Electronic form version 1.4