

Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

An update on new tungsten ionization and excitation data for use in erosion, redeposition, and transport studies¹ S.D. LOCH, D.A ENNIS, C.J. FAVREAU, C.A. JOHNSON, M.S. PINDZOLA, Auburn University, C.P. BALLANCE, N. DUNLEAVY, R. SMYTH, Queen's University of Belfast — Spectroscopic techniques to measure erosion, redeposition, and transport for tungsten plasma facing components require accurate atomic data, with the near neutral ion states being the most critical. In support of tungsten experiments on DIII-D, the available atomic data has been undergoing improvements over the last few years using large-scale quantal calculations. Recent modeling suggests that it is important to include the role of non-steady-state metastables in the interpretation of many diagnostic measurements, which led to a new R-matrix with PseudoStates (RMPS) calculation for neutral W metastable ionization. This calculation also included new neutral W ground state ionization results. The impact of the new data on W I S/XBs and effective ionization rate coefficients is presented. New non-perturbative results for W⁺ ionization and excitation were also performed, for applications in redeposition studies. The role of double ionization is also explored.

¹Work supported by USDOE grants DE-SC0015877 DE-FC02-04ER54698

Stuart Loch
Auburn University

Date submitted: 03 Jul 2019

Electronic form version 1.4