

Abstract Submitted
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Spectroscopic measurements of neutral tungsten for gross erosion measurements¹ CURTIS JOHNSON, DAVID ENNIS, STUART LOCH, Auburn University, RYAN SMYTH, CONNOR BALLANCE, NICOLE DUNLEAVY, Queen's University Belfast, TYLER ABRAMS, General Atomics - San Diego, EZEKIAL UNTERBERG, ORNL — Tungsten erosion at the plasma boundary is diagnosed spectroscopically with a new high-resolution UV spectrometer in combination with improved predictions for atomic coefficients representing the ionizations per photon (S/XB). New collisional radiative modeling suggests that neutral tungsten emission in low density linear plasma experiments such as the PR-2 facility as well as fusion relevant experiments are dominated by the non-steady state W metastable populations. The time evolution of neutral W metastables is tracked using the recently released collisional radiative solver ColRadPy. A scheme for measuring non-steady state metastable populations will be presented using W I spectral lines around 260 nm. A new high-resolution UV optimized spectrometer has been tested on the Compact Toroidal Hybrid (CTH) experiment in preparation for installation on DIII-D. High-resolution tungsten spectra from CTH will be presented and compared to modeled spectra using W I R-matrix excitation data and exchange classical impact parameter (ECIP) ionization data.

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