

Abstract Submitted  
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**Experimental and Theoretical Studies of the Soft X-ray Emission of Tungsten from Tokamak Plasmas** JOEL CLEMENTSON, PETER BEIERS-DORFER, GREGORY BROWN, MING GU, Lawrence Livermore National Laboratory, ALBERT WYNN, CHARLES WEATHERFORD, Florida A&M University — Tungsten is presently making a comeback as a plasma facing material in magnetic fusion devices. The need for atomic data is paramount in order to diagnose W seeded plasmas. We present a measurement of nickel-like tungsten using crystal spectroscopy, where we have resolved the strong spectral feature at 7.93 Å, previously observed at the ASDEX Upgrade tokamak. We show the feature to be made up of an electric quadrupole and a magnetic octupole component. The measurements were done using the SuperEBIT electron beam ion trap in Livermore and include line positions, intensities, and polarization. We compare our measurements with calculations carried out using the FAC modeling code and show that the two lines are sensitive to electron density. This work was performed under the auspices of the United States Department of Energy by Lawrence Livermore National Laboratory under contracts W-7405-ENG-48 and DE-AC52-07NA-27344.

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