

Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

High-resolution measurements in the EUV on NSTX P. BEIERS-DORFER, LLNL, M. BITTER, L. ROQUEMORE, PPPL, J.K. LEPSON, UC Berkeley, M.-F. GU, S.M. KAHN, Stanford — The extreme ultraviolet (EUV) wavelength band is rich in lines useful as plasma diagnostics. This fact is being used by the Chandra and XMM-Newton satellites for studying stellar coronae and galactic nuclei. We have installed a new grating spectrometer on the NSTX tokamak that allows us to study emission lines in the EUV with similar spectral resolution. We have observed the K-shell lines of heliumlike and hydrogenlike boron, carbon, and oxygen. Moreover, we have measured the L-shell spectra of neonlike Ar, Fe, and Ni. All elements except argon were intrinsic to NSTX plasmas. Many of these spectra are of great interest to astrophysics. Our measurements provide line lists and calibrate density-sensitive line ratios in a density regime not accessible by other laboratory sources. Moreover, we were able to measure the temperature dependence of several iron lines needed to address puzzling results from stellar flare plasmas. This work was performed under the auspices of the U.S. DOE by UC-LLNL under contract W-7405-Eng-48 and by PPPL under contract DE-AC02-76CHO3073.

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Date submitted: 24 Aug 2005

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