

Abstract Submitted
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Magnetic-Dipole Lines in Highly-Charged Ions of Hafnium, Tantalum, and Gold¹ J. READER, D. OSIN, J.D. GILLASPY, YU. RALCHENKO, National Institute of Standards and Technology, Gaithersburg, MD 20899 — We observed spectra of highly-charged ions of Hf, Ta, and Au in the region 10-20 nm with the NIST electron beam ion trap (EBIT). Electron beam energies varied from 4.5-7.0 keV. Ionization stages were distinguished by observing intensities of the observed lines at the different beam energies. Using an extensive collisional-radiative model, we identified more than 100 new magnetic-dipole (M1) lines, mainly within the ground state configurations $3d^n$ ($n=1-9$) for charge states Hf^{45+} to Au^{60+} . The results extend our recent results for M1 lines in highly ionized W [1] to these other heavy elements. The intensity ratios for some of these lines are highly sensitive to electron densities in various plasmas. We will discuss their application to density diagnostics in hot plasmas such as will be found in the ITER tokamak.

[1] Yu Ralchenko et al., Phys. Rev. A, submitted (2011).

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Yuri Ralchenko
National Institute of Standards and Technology, Gaithersburg, MD 20899

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