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X-ray M-shell spectra of multiply-charged heavy ions and their polarization properties ALLA SAFRONOVA, ULYANA SAFRONOVA, TRAVIS HOPPE, NICHOLAS OUART, VICTOR KANTSYREV, University of Nevada, Reno — X-ray M-shell spectra of multiply-charged Ta and W ions are theoretically studied. The details of the atomic structure included in the modeling as well as comparisons with different atomic data codes are presented. Sensitivity of such spectra to the numbers of ionization stages and levels taken into account is discussed. In addition, polarization properties of these spectra are analyzed. In particular, the x-ray line polarization of the prominent M-shell tantalum and tungsten lines is calculated, and polarization markers are identified. X-ray spectropolarimetry is proposed to study polarization of Ta and W line emissions and is illustrated using the results of polarization-sensitive experiments with mid-Z ions. Possible applications to EBIT and plasma experiments are discussed. Work was supported by DOE-NNSA/NV Cooperative Agreement DE-FC52-01NV14050.

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