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Relativistic dielectronic recombination data for low-ionized W W.R. JOHNSON, University of Notre Dame, U.I. SAFRONOVA, A.S. SAFRONOVA, University of Nevada, Reno — We continue our work on theoretical studies of dielectronic recombination of W ions, first of highly ionized and now of low-ionized W ions. In particular, energy levels, radiative transition probabilities, and autoionization rates for [Cd]$4f^{14}5p^5 5l'nl$, [Cd]$4f^{14}5p^5 6l''nl$, [Cd]$4f^{13}5p^6 5l'nl$, and [Cd]$4f^{13}5p^6 6l''nl$ ($l' = d, f$, $l'' = s, p, d, f$, $n = 5-7$ states in Pm-like tungsten (W^{5+}) are calculated using the relativistic many-body perturbation theory method (RMBPT code), the Multiconfiguration relativistic Hebrew University Lawrence Atomic Code (HULLAC code), and the Hartree-Fock-Relativistic method (COWAN code). Branching ratios relative to the first threshold and intensity factors are calculated for satellite lines, and dielectronic recombination (DR) rate coefficients are determined for the singly-excited [Cd]$4f^{14}5p^6 nl$ (n=5-7). The total DR rate coefficient is derived as a function of electron temperature. These atomic data are important in modeling of N-shell radiation spectra of heavy ions generated in various collision as well as plasma experiments. The tungsten data are particulary important for fusion application. This research was sponsored by DOE under the OFES grant DE-FG02-08ER54951 and in part under the NNSA CA DE-FC52- 06NA27588.

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