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Absolute single photoionization cross section measurements of isoelectronic Br^{3+} and Rb^{5+} ions JAY EVANS, KYREN BOBOLUB, ALLISON MUELLER, University of Montana, ALEJANDRO AGUILAR, A.L. DAVID KILCOYNE, The Advanced Light Source, Lawrence Berkeley National Laboratory, RENE BILODEAU, University of Connecticut, MANUEL BAUTISTA, Western Michigan University, AUSTIN KERLIN, NICHOLAS STERLING, University of West Georgia, DAVID MACALUSO, University of Montana — Absolute single photoionization cross-section measurements of Br^{3+} and Rb^{5+} ions were performed using synchrotron radiation and the photo-ion, merged-beams technique at the Advanced Light Source at Lawrence Berkeley National Laboratory. Measurements of Br^{3+} were performed at a photon energy resolution of 21 meV +/- 3 meV from 44.79 – 59.54 eV spanning the $^3P_0$ ground state and $^3P_{1,2}$ and $^1D_2$ metastable state ionization thresholds. Analysis of the measured spectrum produced a new empirical determination of the ionization potential of Br^{3+} of 46.977 +/- 0.050 eV, which is 805 meV lower than the most recently published value. Measurements of Rb^{5+} were made at a nominal photon energy resolution of 25.0 meV from 76.62 to 100.07 eV spanning the $^3P_0$ ground state and $^3P_{1,2}$, $^1D_2$ and $^1S_0$ metastable state ionization thresholds. Autoioniziation resonance series idmtifications and quantum defect behavior are compared between the systems and the results of Br^{3+} are compared to theory.

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