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Absolute single photoionization cross section measurements of Rb^{2+} and Rb^{3+} ions: experiment and theory DANIEL ROGERS, DAVID MACALUSO, ALLISON MUELLER, ANDREA JOHNSON, University of Montana, KYREN BOGOLUB, University of Colorado, Boulder, ALEX AGUILAR, A.L. DAVID KILCOYNE, The Advanced Light Source, LBNL, RENE BILODEAU, University of Connecticut, MANUEL BAUTISTA, Western Michigan University, AUSTIN KERLIN, NICHOLAS STERLING, University of West Georgia — Absolute single photoionization cross-section measurements of Rb^{2+} and Rb^{3+} 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 Rb^{2+} were made at a photon energy resolution of 13.5 meV from 37.31 to 44.08 eV spanning the $^2P_{3/2}$ ground state and $^2P_{1/2}$ metastable state ionization thresholds. Measurements of Rb^{3+} were made at a photon energy resolution of 30.0 meV from 49.50 to 62.49 eV spanning the $^3P_2$ ground state and $^3P_{1,0}$, $^1D_2$, and $^1S_0$ metastable state ionization thresholds. Multiple autoionizing resonance series arising from both parent ions are identified using quantum defect theory. The measurements are compared to Breit-Pauli R-matrix calculations.

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