

Abstract Submitted
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Photoionization of Be-like Ions: R -matrix Calculations W.-C. CHU, H.-L. ZHOU, S.T. MANSON, Georgia State University — The photoionization of the beryllium-like iso-electronic series has been studied. The wave functions of target ions were built with CIV3 program. The Breit-Pauli R -matrix method was used to calculate the cross sections in the photon-energy range between the ionization threshold and $1s^23d_{5/2}$ threshold for each ion. For the total cross sections of C^{2+} , N^{3+} , and O^{4+} , our results match the experiments well. For the ground state photoionization, we identified and characterized the resonances converging to $1s^22l_j$ and $1s^23l_j$ thresholds with their quantum defects, energies and widths using the eigen-phase sum methodology, and compared the present work with other researchers. We discuss the interactions among resonances which explain the seemingly erratic behavior of the resonances and summarize the general appearance of resonances, in both energies and widths, along a resonance series and along the iso-electronic series. This work was supported by DOE. All calculations were performed on the NERSC system.

W.-C. Chu
Georgia State University

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