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Random-phase approximation with exchange for inner-shell electron transitions II: Effects of inter-shell correlations[1] ZHIFAN CHEN, ALFRED Z. MSEZANE, Clark Atlanta University — A random-phase approximation with exchange (RPAE) method, which allows the inclusion of both the intra-shell correlations and the inter-shell correlations in photoionization calculations, has been developed for open-shell atoms (ions), such as I, Xe^+, and I^+. The equations for all types of matrix elements have been derived and implimented in a computer code. The program has been used to study the effects of inter-shell correlations on the Xe^+ $5s$, $5p$ and $4d$ photoionization processes, which are found to increase dramatically the cross sections for the Xe^+ $5s$ and $5p$ eletrons.

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