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Inner-shell Photoionization of Atomic Chlorine: Experiment and Theory W.C. STOLTE, U. Nevada-Las Vegas and Advanced Light Source, Z. FELFLI, A.Z. MSEZANE, Clark Atlanta U., R. GUILLEMIN, UPMC and CNRS, G. OHRWALL, Uppsalla U., S.-W. YU, Lawrence Berkeley Lab., J.A. YOUNG, D.W. LINDLE, U. Nevada-Las Vegas, T.W. GORCZYCA, U. Western Michigan, N.C. DEB, A. HIBBERT, Queen's U., Belfast, S.T. MANSON, Georgia State U.
— Relative partial cross sections have been measured following photoabsorption by atomic chlorine in the vicinity of the Cl $2p$ and $1s$ionization thresholds including the charge state fractions of the residual Cl ions. In addition, Breit-Pauli R-Matrix calculations have been performed in the vicinity of the $2p$ thresholds which show reasonably good agreement with experiment. Including spin-orbit interactions, there are ten $2p^5 3s^2 3p^5$ thresholds of Cl^+, and a total of 64 resonance series leading up to these thresholds from the ground J=3/2 state of the Cl atom; the results show two groups of resonances, broad in connection with the higher-energy thresholds, and narrow for the lower-energy Cl^+ thresholds. This is explained in terms of the angular momentum geometry of the situation which demonstrates that the wide transitions can decay *via* the monopole term in the expansion of the inter-electron Coulomb interaction, while for the narrow resonances, the leading term is the (significantly smaller) dipole term. In the vicinity of the $1s$thresholds, the $1s \rightarrow 3p$ resonance is seen clearly; otherwise the spectrum is quite similar to Ar.

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