Abstract Submitted
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Photoionization and Recombination of Astrophysically Important ION Cl II[1] SULTANA NAHAR, Ohio State Univ - Columbus — Photoionization of Cl II $\rightarrow$ e + Cl III is of importance in nebular models since it determines the fractional abundance of [Cl III]. Intensity ratios of collisionally excited forbidden [Cl III] lines are electron density diagnostics, analogous to the prominent [S II] lines. I will present extensive relativistic calculations using Breit-Pauli R-Matrix (BPRM) method aimed at obtaining photoionization cross section up to high energies, and unified recombination cross sections including radiative and di-electronic components (RR and DR). The configuration interaction expansion of the target wavefunctions comprise of $3s^2 2p^3$, $3s3p^4$, $3s^2 3p^2 3d$, $3s^2 3p^2 4s$, $3s^2 3p^2 4p$, $3s^2 3p^2 4d$, $3s^2 3p^2 5s$, $3p^3 3d$, $3s^2 3p 3d^2$, $3p^5$. The preliminary photoionization cross sections of the 8 lowest levels, $3s^2 3p^4 ({}^3P_{0,1,2}, {}^1D_2, {}^1S_0$, $3s3p^3 ({}^3P_{0,1,2}$ of Cl II are compared with the existing measured values at ALS and found to reproduce all features in the observed spectrum.

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