

Abstract Submitted  
for the DAMOP12 Meeting of  
The American Physical Society

**Electron-impact excitation of  $\text{Cl}^{2+}$**  A.M. SOSSAH, S.S. TAYAL, Clark Atlanta University — We present calculation results for electron-impact excitation of  $\text{Cl}^{2+}$  ions. The collision strengths are calculated in the close-coupling approximation using the B-spline Breit-Pauli R-matrix method. The multi-configuration Hartree-Fock method with term-dependant non-orthogonal orbitals is employed for an accurate description of the target wave functions. The 68 fine-structure levels belonging to the 32  $LS$  states of  $3s^23p^3$ ,  $3s3p^4$ ,  $3s^23p^23d$ ,  $3s^23p^24s$  and  $3s^23p^24p$  configurations are included in the close-coupling approximation; this leads to 2278 possible fine-structure transitions. The effective collision strengths are obtained by averaging the electron collision strengths over a Maxwellian distribution of velocities, and these are tabulated for all fine-structure transitions at electron temperatures in the range 5,000 to 1,000,000 K. Our results are compared with previous theoretical results and available experimental data. This work is supported by NASA grant NNG09AB63G from the Planetary Atmospheres Program.

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Date submitted: 31 Jan 2012

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