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Transition probabilities and collision strengths for electron-impact excitation of Cl^{2+} A.M. SOSSAH, S.S. TAYAL, Calrk Atlanta University — We report on transition probabilities and effective collision strengths for electron-impart excitation of the astrophysically important 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 70 fine-structure levels belonging to the 33 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 2415 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 100,000 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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