Electron Impact Excitation Collision Strengths for Fine-Structure Transitions in Si VIII[1] SWARAJ TAYAL, Clark Atlanta University — Electron impact excitation collision strengths for transitions between the fine-structure levels of the $2s^2 2p^3$, $2s 2p^4$, $2p^5$, $2s^2 2p^2 3s$, $2s^2 2p^2 3p$, and $2s^2 2p^2 3d$ configurations in Si VIII have been calculated using the B- spline Breit-Pauli R-matrix method. The distinctive feature of the atomic calculations is the use of B-splines as a universal basis to represent the scattering functions. The multiconfiguration Hartree-Fock method with term-dependent non- orthogonal orbitals is employed for an accurate representation of the target wave functions. The calculated excitation energies are in excellent agreement with the experimental energies, and represent significant improvements over the previous calculations. The close-coupling expansion included 76 bound levels in the scattering calculation. The present results have been compared with available other calculations. The oscillator strengths and collision strengths for several transitions will be presented.

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