Electron Impact Excitation Cross Sections for $\mathbf{S^{2+}}$[1] SWARAJ
TAYAL, Clark Atlanta University, OLEG ZATSARINNY, Drake University — Improved electron impact excitation cross sections calculation for fine-structure transitions in S^{2+} have been performed using the B-spline Breit-Pauli R-matrix method. The flexible non-orthogonal sets of spectroscopic and correlation radial functions are employed for an accurate representation of the target states and scattering functions. The close-coupling expansion includes 109 bound levels covering all possible terms of the ground $3s^23p^2$ and excited $3s3p^3$, $3s^23p3d$, $3s^23p4s$, $3s^23p4p$, $3s^23p4d$, $3s^23p5s$, $3s^23p4f$, $3s^23p5p$, $3s3p^23d$, and $3s3p^24s$ configurations. The calculated excitation energies of the target levels are in excellent agreement with experiment and represent an improvement over the previous calculations. The present results of cross sections are compared with a variety of other close-coupling and distorted-wave calculations. The oscillator strengths are in good agreement with other theories and available experimental results.

Swaraj Tayal
Clark Atlanta University

Date submitted: 23 Jan 2018   Electronic form version 1.4