Relativistic calculations of K-shell photoionization cross-sections for $^{32}_{16}$S at 59.6 keV excitation energy

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Abstract

In this work we calculate photoionization X-ray cross-sections of K-shell vacancies in S at incident photon energy of 59.6 keV using the Dirac-Fock method and the MCDFGME (**M**ulti **C**onfiguration **D**irac **F**ock and **G**eneral **M**atrix **E**lement) code [1-3]. Calculations are performed in single configuration approach with the Breit interaction. Higher-order retardation corrections and QED effects were also included as perturbations. Fluorescence yield necessary to derive the X-ray production cross section (XPCS) were obtained in a previous work using the exact same approach. The obtained results are compared to existing theoretical and experimental results.

Keywords: Photoionization, X-ray production, Cross-sections, Dirac-Fock calculations