

Abstract Submitted
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Energy Levels and Radiative Rates in Al-Like Copper¹ G.P. GUPTA, S.D. (Postgraduate) College, INDIA, A.Z. MSEZANE, Clark Atlanta U. — Excitation energies from ground state for 98 fine-structure levels and oscillator strengths and radiative decay rates for all electric-dipole-allowed and intercombination transitions among the fine-structure levels of the terms belonging to the $(1s^2 2s^2 2p^6) 3s^2 3p$, $3s 3p^2$, $3s^2 3d$, $3p^3$, $3s 3p 3d$, $3p^2 3d$, $3s 3d^2$, $3s^2 4s$, $3s^2 4p$, $3s^2 4d$, $3s^2 4f$, and $3s 3p 4s$ configurations of Cu XVII, are calculated using extensive CI wave functions [1]. The important relativistic effects in intermediate coupling are incorporated through the Breit-Pauli Hamiltonian. We have also investigated the effects of electron correlations on our calculated data, particularly on the intercombination transitions, by including orbitals with up to $n=5$, considering up to three electron excitations from the valence electrons of the basic configurations and including a large number of configurations. Our adjusted excitation energies are in excellent agreement with experimental results [2]. We find enormous mixing among several fine-structure levels, making it very difficult to identify them correctly. Our radiative lifetimes of the fine-structure levels agree excellently with those of Ref. [3]. 1. A. Hibbert, *Comput. Phys. Commun.* **9**, 141 (1975). 2. T. Shirai *et al.*, *J. Phys. Chem. Ref. Data* **20**, 12 (1991). 3. E. Trabert *et al.*, *J. Opt. Soc. Am. B* **5**, 2173 (1988)

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