ATOMIC STRUCTURE CALCULATIONS AND ELECTRON IMPACT EXCITATION OF CHLORINE LIKE TUNGSTEN IONS

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Abstract

Extensive calculations of energy levels and radiative data such as transition wavelengths, transition rates, oscillator strengths and line strengths for electric diploe (E1) transitions are performed for chlorine like Tungsten ions WLVIII using Flexible Atomic code (FAC).These calculations include the major correlation effects. Comparisons are made with the available experimental results and theoretical data in the literature. Close agreement has been found ensuring the accuracy and reliability of our results. We have studied collisional excitation cross section and presented magnetic sublevel cross sections for excitations from ground state $3s^2\ 3p^5\ {}^2P^o_{3/2}$ to the first excited sate $3s^2 3p^4 3d\ {}^4D_{3/2}$ of W^{57+}as a function of incident electron energy. We predict new data for several levels where no other theoretical and/or experimental results are available which will form basis for future experimental work. Our work will help develop diagnostics to measure tungsten concentrations in fusion plasmas and provide support for modeling predictions.