

Spectral lines from C-like to Ca-like tungsten

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In recent years, just like X-rays from few-electron ions, extreme ultraviolet rays (EUV) from highly charged heavy ions have attracted attention in the temperature diagnostics of tokamak plasmas such as International Thermonuclear Experimental Reactor (ITER). Among all possible high Z impurities in ITER, tungsten is expected to be the most abundant [1].

In this work, we investigate the radiative decay of some select ions of W in the range W^{68+} to W^{54+} and report the structure of the spectral lines from these ions. The calculations have been carried out using multi-configuration Dirac-Fock wavefunctions with the inclusion of magnetic interaction, retardation and quantum electrodynamics effects [2]. The radiative decay wavelengths and rates are compared with currently available theoretical and experimental data [3].

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