

Photorecombination of Electrons in Dense Plasmas

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The plasma screening effect on the photorecombination of free electrons, with ions in a weakly plasma is investigated. The recombination cross section is obtained by the principle of detailed balance with the photoionization cross section of the hydrogenic ion including the plasma screening effects on the bound and continuum states of the electron. It is found that the plasma screening effects on the recombination cross section are less than 11% when the Debye length (Λ) is greater than ten times of the Bohr radius (a_z) of the hydrogenic ion with nuclear charge Z .

Key words: Electron-ion Recombination; Plasma.