

Effect of the ion dynamics onto the Stark profiles of Lyman series of the H-like Si

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We present calculations of the spectral profiles of Lyman α , β , γ , δ , ϵ transitions in the hydrogen-like silicon perturbed by a plasma composed of hydrogen and carbon nuclei, and electrons, where the electron density and the plasma temperature have been taken in the range of $N_e = 3 \times 10^{21} - 3 \times 10^{22} \text{ cm}^{-3}$ and $T = 100 - 2000 \text{ eV}$, respectively. The ion dynamics effects have been taken into account. Fitting procedure of the spectral profiles has been performed. It has been demonstrated that Lyman profiles can be fitted by a linear combination of three Lorentzians with the accuracy that is sufficient for the required purposes. Graphs and tables of the profiles and fitting parameters, that can be useful for plasma diagnostics, are presented.