DATA EVALUATION AND FITTING OF ELECTRON IMPACT IONIZATION CROSS SECTIONS OF Ar, Cl, F, N2, O2, Cl2, F2 AND THEIR IONS FOR PLASMA MODELING

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The still growing influence of the plasma technologies on the world's largest manufacturing industries, puts new requirements on the quality of atomic data supplied. Maybe more than ever the field of plasma modeling is in need of reliable electron impact ionization cross sections data. This work aims to provide accurate analytical fits for the most common atomic species found in plasmas, such as Argon and halogen elements like Fluorine and Chlorine, etc. The first attempts for the analytical fitting of the relevant molecular species are also made. The standard BELI formula is revisited, however other analytical expressions are suggested, too, for approximating single-ionization cross sections. In the evaluation process the preference is given to experimental data up to date covering the whole range in energies. The question of the factors effecting the accuracy of the fits is addressed as well.