dance with the predictions given by Smirnov, it was found that two- electron loss cross section values ($\sigma_{\bar{1}1}$) are very close to those for one-electron loss process of neutrals (σ_{01}). Three-electron loss cross sections decrease with increasing the second ionization potential of the primary particle and gas target mass number, Z, similarly as for two-electron loss process.

In the investigated energy range, two- and three-electron loss cross sections increase sharply and monotonically with energy, while those for one-electron loss process, are, in general, independent on energy, or in some cases increase very slowly with energy.

1.3 Electron detachment in $H^- - H$ and $O^- - O$ collisions

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Abstract

A semiclassical two-state approximation of the collisional electron detachment is given in impact parameter treatment. Averaging the auto-ionization width in the continuum, for the reaction probability the following expression is obtained

$$\omega(\varrho, v) = 1 - \exp\left[\frac{-2\Gamma}{v}(R_0^2 - \varrho^2)^{1/2}\right], \tag{1}$$

where R_0 is the stabilization internuclear distance, Γ is the averaged width in the interval $(0, R_0)$ ϱ is the impact parameter and v is the relative velocity of the colliding particles. The reaction cross section is obtained in the form:

$$Q(v) = \pi R_0^2 \left\{1 - \frac{2}{a^2}[1 - (1+a)\,e^{-a}]\right\}, \tag{2}$$

where $a = \dfrac{2\Gamma R_0}{v}$.

The formulae (1) and (2) refer both to symmetrical and antisymmetrical potential modes.

The total collisional detachment cross sections for $H^- - H$ and $O^- - O$ reactions are calculated and good agreement is obtained with the experimental data.

1.4 Electron-impact K-ionization cross-section for C and Al in the keV region

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While in recent years the study of cross-sections of atoms in outer shells by electron impact has been subject of growing interest in experimental and theoretical work, experimental data on inner shell ionization cross-sections are still rare as well as accurate evaluation of these data. Lotz[1] developed an empirical formula which covers also inner shell ionization. But experimental results of inner shell ionization cross-sections of low Z atoms - these are needed rather than data for high Z atoms in the fields of astrophysics, plasma physics nad quantitative micro-