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Systematic measurements in closed electron shell interaction particles

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The absolute value of differential and integral cross section for charge exchange, ionization and stripping (electron loss) processes in collisions of single charge alkali metal ions with rare gas atoms and some atmospheric molecules (N_2, H_2) are measured. Despite the many studies devoted to this systems carried out by a variety of methods, the data available on the absolute cross section of mentioned above processes are contradictory and in some cases unreliable. In the present work a precise measurements are performed by improved transverse electric field and collision spectroscopy methods. Experimental techniques and measurement procedures have been discussed in details in our recent papers $[1-2]$. The energy range of these measurements is $0.7-10keV$ and angular range of the differential cross section measurements is $0-30^0$. The data obtained in this study have been used to elucidate possible mechanism of the corresponding processes. Where possible a comparison is made to the result of available theory. From these differential cross sections the threshold character for the most realizing inelastic processes are revealed. The contributions of partial inelastic channels to the total cross sections of ionization are clarified.

[1] B.I.Kikiani, R.A. Lomsadze et al, Zh.Tekh.Fiz. 55, (1985) 1612 [Sov.Phys.Tech.Phys., 30, (1985) 934].
[2] M.Gochitashvili, R.Lomsadze et al, Proceedengs of I.Javakhishvili Tbilisi State University, Physics 39, (2004) 162.