

Comment on

“Electron impact ionization of helium isoelectronic systems”

M.R. Talukder, Eur. Phys. J. D 49, 167–172 (2008)

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Abstract. We show that the criticism [Eur. Phys. J. D 49, 167 (2008)] of our empirical formula for electron-impact ionization of atomic ions [J. Phys B. 33, 5025 (2000)] is unjustified.

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In a recent paper [1], Talukder proposed a new empirical formula for electron-impact ionization cross sections of He-like ions that was claimed to excellently agree with the available experimental and theoretical data. Discussing this agreement, the author of reference [1] makes extensive comparison with our recommended formula of reference [2] (referred to as “BRY” in [1] although it would be more appropriate to use “BRM”) and comes to a conclusion that it fails to describe experimental data both in magnitude and in the dependence on the electron energy.

It is however obvious that our results are grossly misrepresented in [1], most likely because of the incorrect usage of formula (3) in reference [2]. First, our formula was explicitly derived for *ions* and its usage for neutral He, as it is done in [1], is wrong. Second, the values of the cross sections that Talukder presented in reference [1] using our formula are incorrect. Indeed, we present in Figure 1 the values our formula yields for the cross sections given in reference [1]. Shown is a comparison of the calculated ionization cross sections [2] for He-like ions of B, N, O, and Ar.

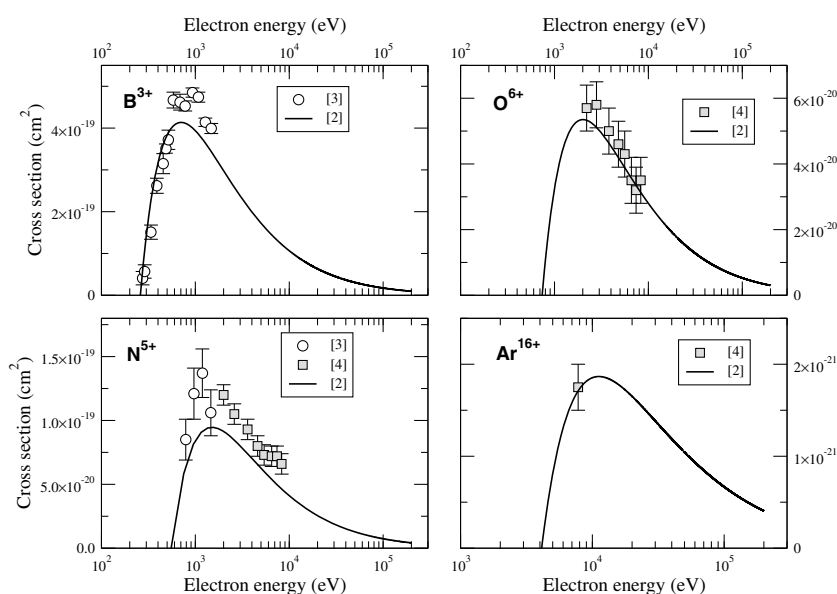


Fig. 1 Comparison of ionization cross sections of Ref. [2] (solid line) with the available experimental data for He-like ions of B, N, O, and Ar. Circles: reference [3]; squares: reference [4].

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Ar with the available experimental data [3,4]. In all cases, our results agree well with the measurements, and the actual values lie about 30% higher than the corresponding “BRY” curves presented in [1]. This shows that the conclusions of reference [1] regarding applicability and accuracy of our formula are incorrect.

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