Erratum: Degenerate Wannier Theory for Multiple Ionization [Phys. Rev. Lett. 80, 5081 (1998)]

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In our Letter we have provided a derivation of the threshold fragmentation cross section

$$\sigma(\epsilon \to 0) \propto \epsilon^{(N-2)\beta} \tag{1}$$

as a function of the excess energy ϵ in terms of the stability coefficients (Liapunov exponents) λ_i of the relevant fragmentation fixed point. The evaluation of the Jacobi matrix with elements $J_{ij} = \partial\alpha_i(\tau)/\partial\eta_j^-$ cannot be performed as it was done in Eq. (11) of our Letter since in this case the relevant $N - 2$ dimensional phase space volume collapses and the determinant of the Jacobi matrix becomes singular. Instead, one has to consider the full expression for the Jacobi matrix without taking the limit of large τ. As a consequence, the exponent in Eq. (1) is not given by $\beta = 2\lambda_1/p^*$ but by

$$\beta = \frac{2}{(N-2)p^*} \sum_{i=1}^{N-2} \lambda_i \,. \tag{2}$$

For the case of degenerate eigenvalues λ_i, β of Eq. (2) remains unchanged unless, e.g., the eigenvalues $N - 2$ and $N - 1$ are degenerate. Then, a logarithmic correction occurs in the threshold cross section

$$\sigma_d \propto \epsilon^{(N-2)\beta} |\ln \epsilon|^{-1}. \tag{3}$$

A physical system where this situation is realized is the double ionization of the positronium negative ion by a positron, as can be seen from the λ_i calculated in [1]. We will provide a more detailed discussion of the derivation of Eqs. (2) and (3) in a separate publication.

For triple photoionization of an atom, however, β is given by Eq. (2) and *no* logarithmic corrections occur. Hence, the discrepancies between the experiment [2] and the threshold cross section Eq. (1) still exist and their origin remains unclear.

Finally, we note that Eq. (14) in our Letter contains a misprint and should read

$$2\beta = 4\lambda_1/p^* = \frac{1}{2}\left[\left(\frac{a + 2\sqrt{b}}{\sqrt{3}\,Z - 1}\right)^{1/2} - 1\right], \tag{14}$$

with a and b given in our Letter.

We thank W. Ihra for pointing out the faulty evaluation of the Jacobi determinant.

[1] M. Y. Kuchiev and V. N. Ostrovsky, Phys. Rev. A **58**, 321 (1998).
[2] J. A. R. Samson and G. C. Angel, Phys. Rev. Lett. **61**, 1584 (1988).

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