Erratum: Time-dependent formation of the profile of the He $2s2p\ ^1P^o$ state excited by a short laser pulse [Phys. Rev. A 75, 013407 (2007)]

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In the theoretical work reported in the above-named work and Ref. [1], we adopted and implemented two approaches. The first, named the "*state-specific expansion approach*" (SSEA), solves the time-dependent Schrödinger equation for all orders nonperturbatively [2]. It is valid for weak as well as for strong fields. The second, which is meant to hold for weak fields, was constructed and was solved in the framework of first-order time-dependent perturbation theory. It resulted in an analytic formula which includes the effects of the excitation strength, of interference in the continuous spectrum, and of the pulse. The same formula appears in Eq. (5) of Ref. [1].

For weak fields, the calculations showed perfect agreement between the two approaches, thereby, validating the analytic formula, Eq. (32), of our work. A sample of this type of agreement for field strength $F = 0.04$ a.u. at the end of the duration of the pulse ($t = 450$ a.u. $= 11$ fs) was reported as Fig. 2.

We just became aware of the fact that there is a trivial misprint in the analytic formula, Eq. (32), of our work. This resulted from a hasty "cut and paste" from the previous formula, Eq. (30), of our work. Specifically, the factor $1/2\pi i$ in Eq. (32) should be absent since it is eliminated by the contour integration, which is explicitly stated in the text. Hence, the correct formula for

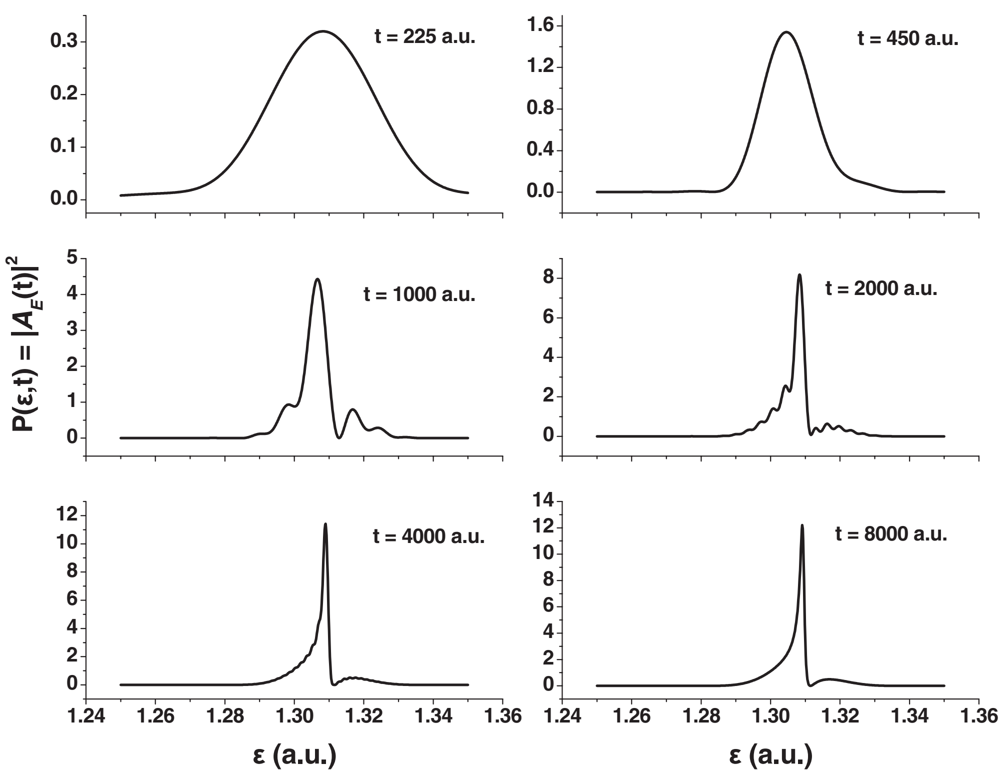

FIG. 1. Application of Eq. (32): Time-resolved formation of the asymmetric profile of the differential ionization probability of the He $2s2p\ ^1P^o$ resonance state for excitation from the ground state. ε is the energy above the ionization threshold. The pulse characteristics are as in Fig. 3 of our paper.

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the amplitude of the time-dependent excitation probability (which was actually used in the computations) is

$$A_E(t) = C_E\left[q + \frac{E - E_0 - \Delta}{\Gamma}\right]e^{-iEt}G(E,t) - C_E(q - i)e^{-iz_0t}G(z_0,t). \tag{32}$$

The symbols are explained in our paper.

Figure 1 here depicts the results from the application of Eq. (32) for the $\sin^2$ pulse chosen in our paper in the time range of (225–8000 a.u.), i.e., (5.4–193.4 fs). There is excellent agreement with the results from the SSEA, which were reported in Fig. 3 of our paper.

[1] C. A. Nicolaides, T. Mercouris, and Y. Komninos, Phys. Rev. A **80**, 055402 (2009).

[2] T. Mercouris, Y. Komninos, and C. A. Nicolaides, Adv. Quantum Chem. **60**, 333 (2010).