

Erratum: Phase-resolved attosecond near-threshold photoionization of molecular nitrogen **[Phys. Rev. A 80, 011404(R) (2009)]**

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We have found a small mistake in the calibration of the experimental data. The phase of the sideband of order $2q$ measured by the Reconstruction of Attosecond Beating By Interference of Two-photon Transitions (RABBIT) technique in molecular nitrogen is the sum

$$\Phi_{2q}^{\text{N}_2} = \varphi_{2q+1} - \varphi_{2q-1} + \Delta\theta_{2q}^{\text{N}_2} \quad (1)$$

of the harmonic phase difference $\varphi_{2q+1} - \varphi_{2q-1}$ and the molecular phase difference $\Delta\theta_{2q}^{\text{N}_2}$. The latter is the phase of interest in this study. The sideband phase obtained in a calibration measurement in atomic argon is given by

$$\Phi_{2q}^{\text{Ar}} = \varphi_{2q+1} - \varphi_{2q-1} + \Delta\theta_{2q}^{\text{Ar}}. \quad (2)$$

The atomic phase difference $\Delta\theta_{2q}^{\text{Ar}}$ is determined from theory. The molecular phase difference is thus obtained by

$$\Delta\theta_{2q}^{\text{N}_2} = \Phi_{2q}^{\text{N}_2} - \Phi_{2q}^{\text{Ar}} + \Delta\theta_{2q}^{\text{Ar}}. \quad (3)$$

In our original manuscript, there was a sign error on the values of $\Delta\theta_{2q}^{\text{Ar}}$ used in the calibration procedure due to the different sign convention of Ref. [15] from which they were extracted. The molecular phase differences were therefore too small by $2\Delta\theta_{2q}^{\text{Ar}}$, i.e., by (0.4, 0.36, 0.32, 0.28) rad for sidebands (12, 14, 16, 18).

The correctly extracted evolution of the molecular phases $\Delta\theta_{2q}$ for N_2 as a function of sideband order is shown in Fig. 3, which replaces Fig. 3 of the original paper. Roughly, all curves shift upwards by $\approx 0.1\pi$ rad, which is of the order of the error bars magnitude. The sentences mentioning the molecular phase values in the article are to be corrected as follows: For the X channel, sideband 12 shows a remarkable behavior: $\Delta\theta_{12}$ is -0.21π for $v' = 0$ and reaches -0.76π for $v' = 1$ and $v' = 2$. For the A channel, $\Delta\theta_{2q}$ stays close to zero for all sideband orders, between -0.1π and 0.08π .

None of these corrections affect the conclusions of the original paper, in particular the attribution of the molecular phases' behavior to the presence of a resonance in the vicinity of harmonic 11 and their sensitivity to vibrational excitation of the ion.

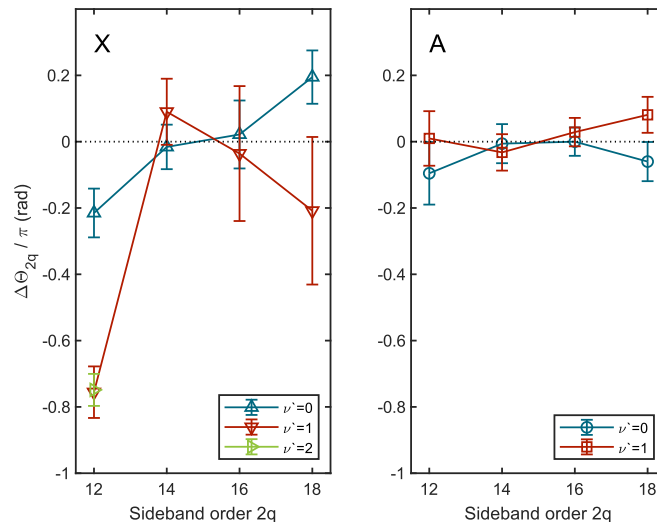


FIG. 3. Molecular phase difference $\Delta\theta_{2q}$ as a function of the sideband order for different ionization channels.