

Author Correction: From a quantum-electrodynamical light–matter description to novel spectroscopies

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Equation 1 in the original version of the article (pdf and online) should read:

$$\begin{aligned} \hat{H}_{\text{PF}}(t) = & \sum_{l=1}^{N_e} \frac{1}{2m} \left[\boldsymbol{\sigma}_l \cdot \left(-i\hbar \nabla_{\mathbf{r}_l} + \frac{|e|}{c} \hat{\mathbf{A}}_{\perp}^{\text{tot}}(\mathbf{r}_l, t) \right) \right]^2 \\ & + \sum_{l=1}^{N_n} \left\{ \frac{1}{2M_l} \left(-i\hbar \nabla_{\mathbf{R}_l} - \frac{Z_l |e|}{c} \hat{\mathbf{A}}_{\perp}^{\text{tot}}(\mathbf{R}_l, t) \right)^2 \right. \\ & \left. - \frac{Z_l |e| \hbar}{2M_l c} \mathbf{S}_l^{(n_l/2)} \cdot (\nabla_{\mathbf{R}_l} \times \hat{\mathbf{A}}_{\perp}^{\text{tot}}(\mathbf{R}_l, t)) \right\} \\ & + \frac{1}{2} \sum_{l \neq m}^{N_e} w(|\mathbf{r}_l - \mathbf{r}_m|) + \frac{1}{2} \sum_{l \neq m}^{N_n} Z_l Z_m w(|\mathbf{R}_l - \mathbf{R}_m|) \\ & - \sum_{l=1}^{N_e} \sum_{m=1}^{N_n} Z_m w(|\mathbf{r}_l - \mathbf{R}_m|) + \sum_{\mathbf{k}, \lambda} \hbar \omega_{\mathbf{k}} \hat{a}_{\mathbf{k}, \lambda}^{\dagger} \hat{a}_{\mathbf{k}, \lambda} \end{aligned}$$

Pauli Hamiltonian for N_e electrons and N_p nuclei in Box 1 (pdf and online) should read:

$$\begin{aligned} \hat{H}_{\text{p}}(t) = & \sum_{l=1}^{N_e} \frac{1}{2m} \left[\boldsymbol{\sigma}_l \cdot \left(-i\hbar \nabla_{\mathbf{r}_l} + \frac{|e|}{c} \mathbf{A}_{\perp}^{\text{tot}}(\mathbf{r}_l, t) \right) \right]^2 \\ & + \sum_{l=1}^{N_n} \left\{ \frac{1}{2M_l} \left(-i\hbar \nabla_{\mathbf{R}_l} - \frac{Z_l |e|}{c} \mathbf{A}_{\perp}^{\text{tot}}(\mathbf{R}_l, t) \right)^2 \right. \\ & \left. - \frac{Z_l |e| \hbar}{2M_l c} \mathbf{S}_l^{(n_l/2)} \cdot (\nabla_{\mathbf{R}_l} \times \mathbf{A}_{\perp}^{\text{tot}}(\mathbf{R}_l, t)) \right\} \\ & + \frac{1}{2} \sum_{l \neq m}^{N_e} w(|\mathbf{r}_l - \mathbf{r}_m|) + \frac{1}{2} \sum_{l \neq m}^{N_n} Z_l Z_m w(|\mathbf{R}_l - \mathbf{R}_m|) \\ & - \sum_{l=1}^{N_e} \sum_{m=1}^{N_n} Z_m w(|\mathbf{r}_l - \mathbf{R}_m|) \end{aligned}$$

The total transversal vector potential in Box 1 (pdf and online) needs to be expressed as:

$$\mathbf{A}_{\perp}^{\text{tot}}(\mathbf{r}, t) = \mathbf{A}_{\perp}(\mathbf{r}, t) + \mathbf{A}^{\text{ext}}(\mathbf{r}, t)$$

Maxwell–Kohn–Sham Hamiltonian in Box 2 (pdf and online) should read:

$$\begin{aligned} \hat{H}_{\text{MKS}}(t) = & \sum_{l=1}^{N_e} \frac{1}{2m} \left[\boldsymbol{\sigma}_l \cdot \left(-i\hbar \nabla_{\mathbf{r}_l} + \frac{|e|}{c} (\mathbf{A}_{\perp}^{\text{tot}}(\mathbf{r}_l, t) + \mathbf{A}^{\text{xc}}(\mathbf{r}_l, t)) \right) \right]^2 \\ & + \sum_{l=1}^{N_n} \left\{ \frac{1}{2M_l} \left[-i\hbar \nabla_{\mathbf{R}_l} - \frac{Z_l |e|}{c} (\mathbf{A}_{\perp}^{\text{tot}}(\mathbf{R}_l, t) + \mathbf{A}^{\text{xc}}(\mathbf{R}_l, t)) \right]^2 \right. \\ & \left. - \frac{Z_l |e| \hbar}{2M_l c} \mathbf{S}_l^{(n_l/2)} \cdot [\nabla_{\mathbf{R}_l} \times (\mathbf{A}_{\perp}^{\text{tot}}(\mathbf{R}_l, t) + \mathbf{A}^{\text{xc}}(\mathbf{R}_l, t))] \right\} \end{aligned}$$

Density–current response function in Box 3 (online only) should read as:

$$\chi_{n, \mathbf{j}}^{(1)}(\mathbf{r}, t; \mathbf{r}', t') = -i\theta(t-t') \langle [\hat{n}_{\mathbf{j}}(\mathbf{r}, t); \hat{\mathbf{j}}_{\mathbf{j}}(\mathbf{r}', t')] \rangle$$

In Box 4 (pdf only), the splitting of the excited electronic states observed in recent molecular experiment has been found proportional to:

$$\Omega_{\mathbf{R}}/\omega_k \approx 0.25$$

The induced density response function in Box 5 (online only) should read:

$$\chi_{n,A}(\mathbf{r}, t; \mathbf{r}', t') = -i\theta(t-t') \langle [\hat{n}_I(\mathbf{r}, t); \hat{\mathbf{A}}_I(\mathbf{r}', t')] \rangle$$

and in Box 5 (online only) the above mode-resolved response function leads to:

$$\chi_{n,q}(\mathbf{r}, t; \alpha, t') = -i\theta(t-t') \langle [\hat{n}_I(\mathbf{r}, t); \hat{q}_{\alpha I}(t')] \rangle$$

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