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Corrigendum: Aspects of 1*S*–2*S* spectroscopy of trapped antihydrogen atoms (2017 *J. Phys. B: At. Mol. Opt. Phys. Biofabrication* 50 184002)

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(Some figures may appear in colour only in the online journal)

We have found three mistakes in [1], the corrections for which are reported here. Firstly, there was an error in the simulation code, which produces the results shown in figures 6–9 of the original paper. The effect of this error was to make the line width of the transition narrower by about a factor two. This naturally also implies that the two mentions of the line width in the text (on page 11 and 15) are off by a factor two and should say 80 kHz instead of 40 kHz. The figures resulting from running the corrected code are shown below with figure numbers from the original paper.

Secondly, equations (1), (3), (4), (7)–(12), and (14)–(15) assume an unusual definition of μ_e and μ_p, which is different from the explanation in the text by a factor 2. Below are the corrected equations, in which μ_e and μ_p should be understood as the magnetic moment of the free electron and proton, respectively, in accordance with the description in the text and the usual definitions of those symbols. We have kept the original equation numbering for ease of referencing.

Finally, equation (8) was missing a power of two on the parentheses under the square roots. This is also corrected in the version below.

$$H = \frac{\mathcal{E}_{HF}}{\hbar^2}(\vec{I}\cdot\vec{S}) + 2\left(-\frac{\mu_e(n)}{\hbar}\vec{S} + \frac{\mu_p}{\hbar}\vec{I}\right)\cdot\vec{B}, \tag{1}$$

$$\mathcal{E}_{F=I\pm1/2} = -\frac{\mathcal{E}_{HF}}{4} - 2\mu_p m_F B \pm \frac{\mathcal{E}_{HF}}{2}\sqrt{1 + 2m_F x + x^2}, \tag{3}$$

$$x = \frac{2B(\mu_e(n) + \mu_p)}{\mathcal{E}_{HF}}, \tag{4}$$

$$\mathcal{E}_{d-d} = \mathcal{E}_{1S2S} - \frac{\mathcal{E}_{HF}(1) - \mathcal{E}_{HF}(2)}{4} + (\mu_e(2) - \mu_e(1))B + \frac{13e^2a_0^2}{4m}B^2, \tag{7}$$

$$\mathcal{E}_{c-c} = \mathcal{E}_{1S2S} + \frac{\mathcal{E}_{HF}(1) - \mathcal{E}_{HF}(2)}{4} + \frac{13e^2a_0^2}{4m}B^2 - \frac{1}{2}\sqrt{\mathcal{E}_{HF}(1)^2 + 4(\mu_e(1) + \mu_p)^2B^2} + \frac{1}{2}\sqrt{\mathcal{E}_{HF}(2)^2 + 4(\mu_e(2) + \mu_p)^2B^2}, \tag{8}$$

$$H = \mathcal{E}_{2P_{1/2}} + \frac{2}{3}\mathcal{E}_{FS}\left(\frac{\vec{L}\cdot\vec{S}}{\hbar^2} + 1\right) - \frac{e\hbar}{2m}\frac{\vec{L}\cdot\vec{B}}{\hbar} - 2\mu_e\frac{\vec{S}\cdot\vec{B}}{\hbar}, \tag{9}$$

$$\begin{aligned}
\mathcal{E}_a &= \mathcal{E}_{2P_{1/2}} + \mathcal{E}_{FS} + 2\mu_e B\\
\mathcal{E}_b &= \mathcal{E}_0(B) + \mathcal{E}_1(B)\\
\mathcal{E}_c &= \mathcal{E}_0(-B) + \mathcal{E}_1(-B)\\
\mathcal{E}_d &= \mathcal{E}_{2P_{1/2}} + \mathcal{E}_{FS} - 2\mu_e B\\
\mathcal{E}_e &= \mathcal{E}_0(B) - \mathcal{E}_1(B)\\
\mathcal{E}_f &= \mathcal{E}_0(-B) - \mathcal{E}_1(-B),
\end{aligned} \tag{10}$$

$$\mathcal{E}_0(B) = \mathcal{E}_{2P_{1/2}} + \frac{1}{2}\mathcal{E}_{FS} + \frac{1}{2}\mu_e B, \tag{11}$$

$$\mathcal{E}_1(B) = \sqrt{\left(\frac{1}{6}\mathcal{E}_{FS} + \frac{1}{2}\mu_e B\right)^2 + \frac{2}{9}\mathcal{E}_{FS}^2}, \tag{12}$$

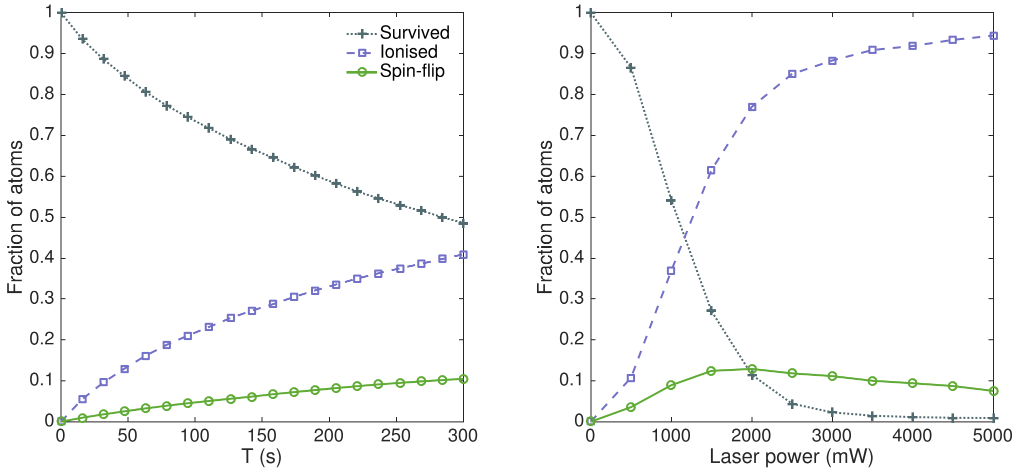

Figure 6. Corrected version of figure 6 in [1]. Note that this particular figure is essentially unchanged, since it is concerned only with the amplitude of the transition, not the width. It is included here only for completeness.

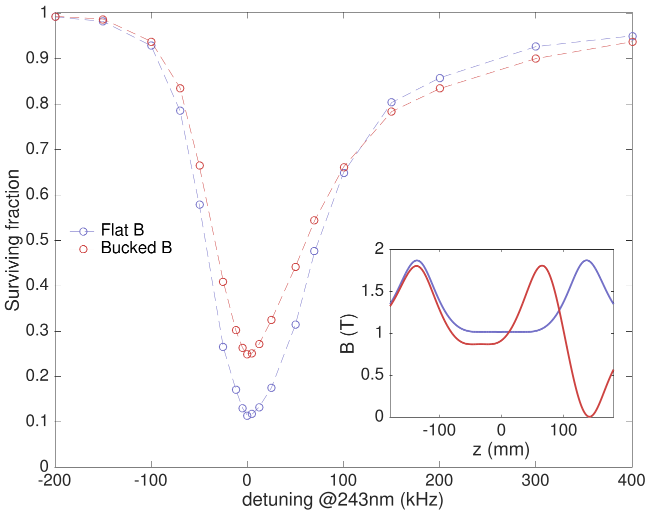

Figure 7. Corrected version of figure 7 in [1].

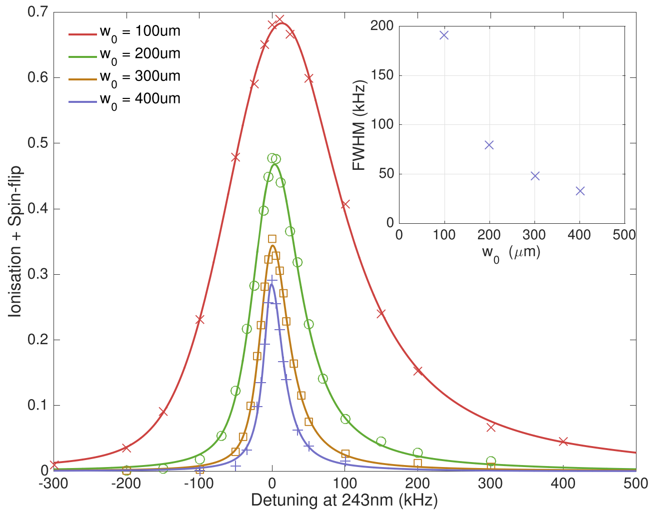

Figure 9. Corrected version of figure 9 in [1].

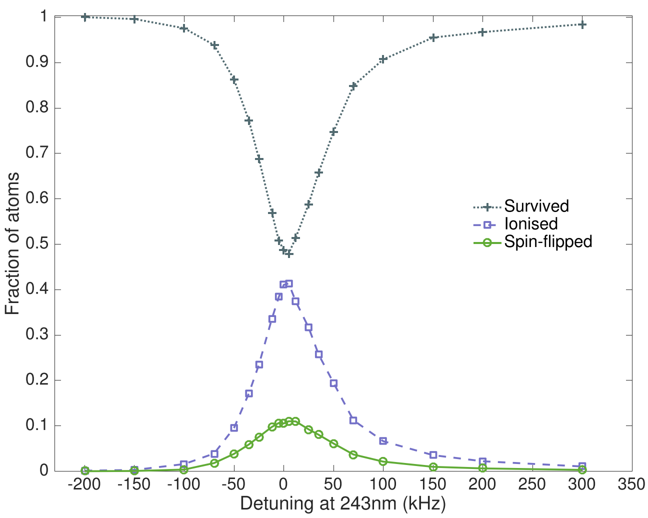

Figure 8. Corrected version of figure 8 in [1].

$$\tan\tau = \frac{6\mathcal{E}_1(B) - 3\mu_e B - \mathcal{E}_{FS}}{2\sqrt{2}\,\mathcal{E}_{FS}}, \tag{14}$$

$$\tan\sigma = \frac{6\mathcal{E}_1(-B) + 3\mu_e B - \mathcal{E}_{FS}}{2\sqrt{2}\,\mathcal{E}_{FS}}. \tag{15}$$

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Reference

[1] Rasmussen C Ø, Madsen N and Robicheaux F 2017 *J. Phys. B: At. Mol. Opt. Phys.* **50** 184002