Erratum: Theoretical study of laser cooling of magnesium monofluoride using *ab initio* methods **[Phys. Rev. A 91, 042511 (2015)]**

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In Fig. 5 and Table II of our paper, the calculated wavelengths $\lambda_{v'v'}$ should be revised as $\lambda_{10} = 365.4$, $\lambda_{21} = 365.1$, and $\lambda_{31} = 374.1$ nm. Besides that, the experimental wavelength λ_{10} also should be amended to 368.8 nm as in Ref. [21].

The above corresponding misidentifications also should be modified in the text. All the detailed modifications are shown as follows. On p. 5 of Sec. III C, in the 8th, 10th, and 13th lines from the top, “ $\lambda_{10} = 350.7$ nm” should be corrected to “ $\lambda_{10} = 365.4$ nm,” in the 9th and 13th lines from the top, “ $\lambda_{21} = 349.6$ nm” should be corrected to “ $\lambda_{21} = 365.1$ nm,” and in the 11th line from the top, the experimental data of Ref. [21] “ $\lambda_{10} = 350.1$ nm” should be corrected to “ $\lambda_{10} = 368.8$ nm.”

The corrected version of Table II is shown as follows.

TABLE II. The calculated Franck-Condon factors (FCFs) $f_{v'v}$ together with other theoretical results (in italics) and wavelength $\lambda_{v'v}$ (nm) of the $A^2\Pi(v') \leftarrow X^2\Sigma^+(v)$ transition (experimental value in brackets). The diagonal FCFs $f_{v'v}$ ($v' - v = 0$) are in bold. Numbers in parentheses indicate the power of 10.

f_{00}	f_{01}	f_{02}	f_{03}	f_{04}			
f_{10}	f_{11}	f_{12}	f_{13}	f_{14}			
f_{20}	f_{21}	f_{22}	f_{23}	f_{24}	λ_{00}	λ_{10}	λ_{21}
f_{30}	f_{31}	f_{32}	f_{33}	f_{34}			
0.917	0.079	0.004	9.9(−5)	1.4(−5)			
0.986 [26]	0.014 [26]	0.000 [26]	0.000 [26]	0.000 [26]			
0.080	0.776	0.138	5.87(−3)	7.5(−5)	358.7	365.4	365.1
0.014 [26]	0.961 [26]	0.026 [26]	0.000 [26]	0.000 [26]	[359.4] [21]	[368.8] [21]	
0.003	0.139	0.721	0.127	0.010			
0.000 [26]	0.026 [26]	0.938 [26]	0.035 [26]	0.001 [26]			
8.5(−5)	0.005	0.133	0.702	0.144			
0.000 [26]	0.000 [26]	0.037 [26]	0.917 [26]	0.044 [26]			

The corrected version of Fig. 5 is shown as follows.

FIG. 5. (Color online) Proposed laser cooling scheme for $^{24}\text{Mg } ^{19}\text{F}$ using the $A^2\Pi \leftarrow X^2\Sigma^+$ transition (solid red line) and spontaneous decay (dotted line) with calculated $f_{v'v}$ for the MgF molecule. Here $\lambda_{v'v}$ is the wavelength of the $A^2\Pi(v') \leftarrow X^2\Sigma^+(v)$ transition.

In addition, on p. 5 of Sec. III D, in the 16th line from the top, “smaller” should be modified to “slightly larger.” On the right side of p. 3, in line 11 from the bottom, “ $B^2\Pi^+$ ” should be corrected to “ $B^2\Sigma^+$.” On the left side of p. 6, in line 10 from

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the bottom, “as” should be revised to “is.” The corrected versions of Refs. [2,21,31,34] are at the bottom of this Erratum. We apologize for this oversight and for any confusion that it has caused. We would like to point out that none of the conclusions are affected by the above correction to the article.

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[2] A. Micheli, G. K. Brennen, and P. Zoller, <i>Nat. Phys.</i> 2 , 341 (2006).	[31] S. R. Langhoff and E. R. Davidson, <i>Int. J. Quantum Chem.</i> 8 , 61 (1974).
[21] R. F. Barrow and J. R. Beale, <i>Proc. Phys. Soc., London</i> 91 , 483 (1967).	[34] M. Douglas and N. M. Kroll, <i>Ann. Phys. (NY)</i> 82 , 89 (1974).
[26] M. Pelegrini, C. S. Vivacqua, O. Roberto-Neto, F. R. Ornellas, and F. B. C. Machado, <i>Braz. J. Phys.</i> 35 , 950 (2005).	