

**Erratum: New values for some $^4\text{He} 1snl$ energy levels,
ionization energies, and Lamb shifts
[Phys. Rev. A 29, 1883 (1984)]**

W. C. Martin

The mass-polarization ($-\epsilon_M$) energies for four levels in Table III are incorrect in the fourth or fifth decimal place because, in adjusting the values calculated by Pekeris and co-workers to the current value of m_e/M_α , the author inadvertently used R_∞ instead of $R(^4\text{He})$ in the conversion factor $2(m_e/M_\alpha)R(^4\text{He})$. The correct value of this factor, $30.084\,39\text{ cm}^{-1}$, is thus smaller by 1.37 parts in 10^4 than the factor used. The correct value of $-\epsilon_M$ for the 2^1S_0 level is -0.2859 cm^{-1} , instead of -0.2860 cm^{-1} , but the change is insignificant compared with the assumed uncertainty of 0.0020 cm^{-1} for the $T_r(2^1S_0)$ value. The correct values of T_{nr} , $-\epsilon_M$, and T_r (in cm^{-1}) for the other three affected levels are

	T_{nr}	$-\epsilon_M$	T_r
2^3S_1	38 453.131 385	-0.223 892	38 454.829 73(10)
2^3P_1	29 222.155 40	1.942 62	29 223.783 37(20)
2^1P_1	27 176.689 91	-1.385 22	27 175.772 26(20)

The $T_{nr}(2^3P_1)$ and $T_{nr}(2^1P_1)$ values are slightly different from the previous values, being obtained from the extrapolated values in Tables III and V, respectively, of Ref. 7. The uncertainty of $0.000\,20\text{ cm}^{-1}$ given here with the $T_r(2^3P_1)$ and $T_r(2^1P_1)$ values should be conservative, since the extrapolated T_{nr} values differed from the final (560-term) calculated values by only 0.0001 cm^{-1} . The net corrections to the $T_r(2^3S_1)$, $T_r(2^3P_1)$, and $T_r(2^1P_1)$ values in Table III are $0.000\,03$, $-0.000\,23$, and $0.000\,26\text{ cm}^{-1}$, respectively.

These changes in the T_r values are too small to affect the corresponding ionization energies (E_I) in Table III, and the corrections of the predicted Lamb shifts in Table IV are insignificant because of the present ionization-energy uncertainty; the Lamb shifts (values of $T_{\text{expt}} - T_r$) for 2^3P_1 and 2^1P_1 in Table IV are altered to $0.0449(40)$ and $0.0022(40)\text{ cm}^{-1}$, respectively. The corrected T_r values should, however, be used in evaluating the Lamb shifts of energy separations involving these levels. Predicted values for the Lamb shifts of the $2^3S_1 - 2^3P_1$ and $2^3P_1 - 2^1P_1$ separations, which are of current interest, are obtained as the differences of the experimental separations (from Table I) and the corresponding calculated separations obtained from the T_r values. The corrected values of the Lamb shifts $\Delta_L(2^3P_1 - 2^3P_1)$ and $\Delta_L(2^3P_1 - 2^1P_1)$ thus obtained are $-0.17775(55)\text{ cm}^{-1}$ and $0.042\,68(30)\text{ cm}^{-1}$, respectively.

The value of $T_r(1s^2^1S_0)$ quoted in the final paragraph is increased by 0.0006 cm^{-1} to $198\,312.0367(5)\text{ cm}^{-1}$ by application of the correct mass-polarization conversion factor.