

Erratum: Theory of terahertz-driven magnetic switching in rare-earth orthoferrites: The case of TmFeO₃ [Phys. Rev. B **111**, 064411 (2025)]

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Since the publication of our paper, we became aware of a number of misprints. First, on p. 1, there is a minor misspelling in the abbreviation of spin-reorientational phase transitions, which should be read as SRPTs. In Eq. (1), the sign inside the parentheses of the second term corresponding to the Dzyaloshinskii-Moriya interaction should be changed to a minus, i.e., $-d(F_x G_z - F_z G_x)$. Also, in the fourth term inside the parentheses corresponding to the anisotropy part, the coefficient G_y^2 should be added, namely, $\frac{1}{2}(K_{ac} G_z^2 + K_{ab} G_y^2 + K_2'' G_y^2 G_z^2)$.

Second, on p. 5, in the system (5), the expression for $F_x = 0$ should be changed to $F_y = 0$, and Eqs. (10), (12), and (13) should be rewritten in the following form:

$$K_{ac}^{\text{eff}}(T) = \left(K_{ac}^0 - \frac{(\Delta_{\text{ex}}^0)^2}{(\tilde{T} - \tilde{\lambda}_f)^2} \left(\tilde{\lambda}_f - \frac{2}{(\tilde{T} - \tilde{\lambda}_f)^2} \right) \right), \quad (10)$$

$$K_{ca}^{\text{eff}}(T) = \left(-2K_2 - K_{ac}^0 + \frac{(\Delta_{\text{ex}}^0)^2}{(\tilde{T} - \tilde{\lambda}_f)^2} \left(\tilde{\lambda}_f + \frac{2}{(\tilde{T} - \tilde{\lambda}_f)^2} \right) \right), \quad (12)$$

$$K_{cb}^{\text{eff}}(T) = \left(K_{ab}^{\text{eff}} - K_{ac}^0 + 2K_2 + K_2'' + \frac{(\Delta_{\text{ex}}^0)^2}{(\tilde{T} - \tilde{\lambda}_f)^2} \left(\tilde{\lambda}_f + \frac{2}{(\tilde{T} - \tilde{\lambda}_f)^2} \right) \right). \quad (13)$$

Also, on p. 5, in the last line of text, there is a small error in the index size: $\Delta R(T)$ should be changed on $\Delta_R(T)$.

In the expression for the anisotropy effective field H_{ac} on pp. 7 and 13, the term K_2 is missing in the case of the intermediate phase Γ_{24} . Therefore, the following expression should be used:

$$H_{ac} = \begin{cases} K_{ac}^{\text{eff}}(T), & T > T_1, \\ 2K_2 \cos \theta \sin \theta, & T_2 < T < T_1, \\ [-K_2 - K_{ac}^{\text{eff}}(T)], & T_2 > T. \end{cases}$$

Additionally, on p. 13, the expressions for the time-varying components $G_x(t)$, $G_y(t)$ and formula for the ω_{qFM} should be amended as follows: $G_x(t) \rightarrow G_{x0} + g_x(t)$, $G_y(t) \rightarrow g_y(t)$, $\omega_{\text{qFM}} = \frac{\gamma}{M_0} \sqrt{H_{\text{ex}} H_{ac}}$.

All these errors occurred while typing the mathematical formulas in the manuscript; the correct equations were used in the simulation, and therefore Fig. 3 and other results remain unaffected and valid.

In addition, the line on p. 7 should be amended as follows: the value of $\Delta_{\text{cf}} = 56.1$ K (39 cm^{-1} or 1.2 THz) should be changed to $\Delta_{\text{cf}} = 57.6$ K (40 cm^{-1} or 1.2 THz). In addition, the value of Δ_{cf} should be corrected to 57.6 K in Table II on p. 14.

Finally, the threshold field H_{THz} required to induce spin switching in TmFeO₃ via the Zeeman mechanism is not 2.1 T, but 2.35 T. This correction applies to p. 8, Fig. 5(b) (legends), as well as to captions, twice in the main text on p. 9, and in Table I.

These errors were caused by wrong copying of the numbers from the code files used for numerical simulation of spin switching. At the same time, the main results and conclusions of the paper remain unchanged.

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Data availability. No data were created or analyzed in this study.