Erratum: Bounds on Lorentz-violating Yukawa couplings via lepton electromagnetic moments [Phys. Rev. D **103**, 055003 (2021)]

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We have identified errors in our estimations of bounds on Lorentz-violation parameters from the Standard Model Extension (SME) contributions to anomalous magnetic moments. Both the analytical expressions and the general discussion are correct. The estimations from bounds on electric dipole moments are correct as well. The problem is a misplaced additive factor, which shifted the constraining conditions for anomalous magnetic moments and thus yielded incorrect limits. Once we realized this issue, we amended the affected results, which comprise all graphs regarding anomalous magnetic moments (Figs. 5–11), provided in Figs. 1–7 of this document, and Table IV. The elements to correct are

- (i) Table I of the present document replaces Table IV of the original paper. The orders of magnitude of the bounds in both the scenario of quasidegenerate textures (QDT) and the scenario of Hermitian Y matrices (HYM) have changed by few orders of magnitude, in most cases only by one:

TABLE I. Bounds on SME coefficients from the Lorentz-violating Yukawa sector.

Assumptions	EMMs	Combinations	Bounds
QDT, $ \text{tr } \kappa_2^{ee} < 10^{-21}$	a_e^{SME}	$ \text{tr } \kappa_1^{ee} $	$< 7.24 \times 10^{-22}$
QDT, $ \text{tr } \kappa_2^{\mu\mu} < 10^{-13}$	a_μ^{SME}	$ \text{tr } \kappa_1^{\mu\mu} $	$< 7.26 \times 10^{-14}$
QDT, $ \text{tr } \kappa_2^{\tau\tau} < 10^{-4}$	a_τ^{SME}	$ \text{tr } \kappa_1^{\tau\tau} $	$< 4.98 \times 10^{-5}$
QDT	d_e^{SME}	$ \text{tr } \kappa_3^{ee} $	$< 5.58 \times 10^{-27}$
QDT	d_μ^{SME}	$ \text{tr } \kappa_3^{\mu\mu} $	$< 1.02 \times 10^{-10}$
QDT	d_τ^{SME}	$-i \text{tr } \kappa_3^{ee}$	$> -5.95 \times 10^{-5}$
			$< 1.21 \times 10^{-4}$
HYM, $\Delta_1^H = 10^2$, $\Delta_2^H = 0.3$	$ a_\mu^{\text{SME}} $	$ \text{tr } \kappa_1^{\mu\tau} $	$< 1.44 \times 10^{-15}$
HYM, $\Delta_1^H = 10^3$, $\Delta_2^H = 0.3$	$ a_\mu^{\text{SME}} $	$ \text{tr } \kappa_1^{\mu\tau} $	$< 1.45 \times 10^{-16}$

FIG. 1. For QDT, allowed region within the parameter space $(\mathcal{X}_1^e, \mathcal{X}_2^e)$, for $|\mathcal{X}_1^e| < 0.73 \times 10^{-21}$ and $|\mathcal{X}_2^e| < 10^{-21}$.

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FIG. 2. For QDT, allowed region within the parameter space $(\mathcal{X}_1^\mu, \mathcal{X}_2^\mu) \times 10^{14}$, for $|\mathcal{X}_1^\mu| < 0.74 \times 10^{-13}$ and $|\mathcal{X}_2^\mu| < 10^{-13}$.

FIG. 3. For quasidegenerate texture, allowed region within the parameter space $(\mathcal{X}_1^\tau, \mathcal{X}_2^\tau) \times 10^4$, for $|\mathcal{X}_1^\tau| < 0.5 \times 10^{-4}$ and $|\mathcal{X}_2^\tau| < 10^{-4}$.

FIG. 4. Allowed regions in the parameter space $(\mathcal{X}_1^e, \mathcal{X}_1^{\mu\tau})$, within $|\mathcal{X}_1^e| < 1.7 \times 10^{-21}$ and $|\mathcal{X}_1^{\mu\tau}| < 10^{-21}$. We consider values $\Delta_1^H = 10^2$ (left-hand graph) and $\Delta_1^H = 10^3$ (right-hand graph), whereas $\Delta_2^H = 0.1, 0.2, 0.3$ are used in both cases.

FIG. 5. Allowed regions in the parameter space $(\chi_1^e, \chi_1^{\mu e})$, within $|\chi_1^e| < 1.7 \times 10^{-21}$ and $|\chi_1^{\mu e}| < 10^{-21}$. We consider values $\Delta_1^H = 15, 150, 1500$, whereas $\Delta_2^H = 1$ is taken.

FIG. 6. Allowed regions in the parameter space $(\chi_1^\mu, \chi_1^{\mu e})$, within $|\chi_1^\mu| < 6 \times 10^{-14}$ and either $|\chi_1^{\mu e}| < 4.5 \times 10^{-15}$ (left-hand graph) or $|\chi_1^{\mu e}| < 4.5 \times 10^{-16}$ (right-hand graph). We consider values $\Delta_1^H = 10^2$ (left-hand graph) and $\Delta_1^H = 10^3$ (right-hand graph), whereas $\Delta_2^H = 0.1, 0.2, 0.3$ are used in both cases.

- (ii) Figure 1 of this document replaces Fig. 5 of the original paper.
- (iii) Figure 2 of this document replaces Fig. 6 of the original paper.
- (iv) Figure 3 of this document replaces Fig. 7 of the original paper.
- (v) Figure 4 of this document replaces Fig. 8 of the original paper.
- (vi) Figure 5 of this document replaces Fig. 9 of the original paper.
- (vii) Figure 6 of this document replaces Fig. 10 of the original paper.

FIG. 7. Allowed regions in the parameter space $(\mathcal{X}_1^\tau, \mathcal{X}_1^\mu)$, within $|\mathcal{X}_1^\tau| < 3.6 \times 10^{-5}$ and $|\mathcal{X}_1^\mu| < 2.2 \times 10^{-5}$. We consider values $\Delta_2^H = 0.1, 0.2, 0.3$, for any Δ_1^H .

(viii) Figure 7 of this document replaces Fig. 11 of the original paper.

(ix) In addition, we provide, in the present document, Table II, which is brand new and displays maximum attained sensitivities. We expect it to be quite useful for the reader.

TABLE II. Maximum attained sensitivities for SME coefficients of Lorentz violation.

EMMs	Parameters	Upper bounds
a_e^{SME}	$ \text{tr } \kappa_1^{ee} $	5.24×10^{-22}
	$ \text{tr } \kappa_1^{e\mu} $	1.35×10^{-19}
	$ \text{tr } \kappa_1^{e\tau} $	2.28×10^{-18}
	$ \text{tr } \kappa_2^{ee} $	2.62×10^{-21}
	$ \text{tr } \kappa_2^{e\mu} $	1.36×10^{-19}
	$ \text{tr } \kappa_2^{e\tau} $	2.28×10^{-18}
a_μ^{SME}	$ \text{tr } \kappa_1^{\mu e} $	4.12×10^{-14}
	$ \text{tr } \kappa_1^{\mu\mu} $	5.26×10^{-14}
	$ \text{tr } \kappa_1^{\mu\tau} $	1.05×10^{-12}
	$ \text{tr } \kappa_2^{\mu e} $	4.21×10^{-14}
	$ \text{tr } \kappa_2^{\mu\mu} $	2.63×10^{-13}
	$ \text{tr } \kappa_2^{\mu\tau} $	1.18×10^{-12}
a_τ^{SME}	$ \text{tr } \kappa_1^{\tau e} $	2.36×10^{-5}
	$ \text{tr } \kappa_1^{\tau\mu} $	2.15×10^{-5}
	$ \text{tr } \kappa_1^{\tau\tau} $	2.99×10^{-5}
	$ \text{tr } \kappa_2^{\tau e} $	2.37×10^{-5}
	$ \text{tr } \kappa_2^{\tau\mu} $	2.64×10^{-5}
	$ \text{tr } \kappa_2^{\tau\tau} $	1.49×10^{-4}
d_e^{SME}	$ \text{tr } \kappa_3^{ee} $	1.12×10^{-26}
	$ \text{tr } \kappa_3^{e\mu} $	8.65×10^{-25}
	$ \text{tr } \kappa_3^{e\tau} $	1.46×10^{-23}
d_μ^{SME}	$ \text{tr } \kappa_3^{\mu e} $	6.09×10^{-5}
	$ \text{tr } \kappa_3^{\mu\mu} $	1.02×10^{-10}
	$ \text{tr } \kappa_3^{\mu\tau} $	1.28×10^{-9}
d_τ^{SME}	$ \text{tr } \kappa_3^{\tau e} $	1.19×10^5
	$ \text{tr } \kappa_3^{\tau\mu} $	3.47×10^{-2}
	$ \text{tr } \kappa_3^{\tau\tau} $	6.31×10^{-5}