Erratum: Bounds on Screened Dark Energy from Near-Earth Space-Based Measurements [Phys. Rev. Lett. 136, 101002 (2026)]

Fabiano Feleppa, Welmoed Marit de Graaf, Philippe Brax, and Gaetano Lambiase

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The main conclusions of the Letter are unchanged.

Line element—The signs of the terms proportional to β and γ in Eq. (1) are incorrect. The line element should read

$$ds^2 = -\left(1 - \frac{2\mathcal{G}M}{r} + \beta\frac{2\mathcal{G}^2M^2}{r^2}\right)dt^2 + \left(1 + \gamma\frac{2\mathcal{G}M}{r}\right)(dr^2 + r^2 d\Omega^2), \tag{1}$$

consistently with the potentials used throughout the Letter. This was a typographical error and does not affect any derived expression.

Dilaton parameters—Equation (12) should read

$$\beta_{\rm dil} = 1 + \frac{A_2}{2}\left(\frac{\phi_\infty}{M_{\rm Pl}\Phi_{\rm N}}\right)^2, \tag{12}$$

and, accordingly, the correspondence between the symmetron and dilaton parametrized post-Newtonian (PPN) parameters stated after Eq. (13) holds for $M_{\rm sym} \equiv M_{\rm Pl}/\sqrt{A_2}$. The original figures were computed with the correct expression.

General relativity baseline—In general relativity, the observables depend on the Earth's gravitational parameter GM. Since G and M are not measured separately, the value of GM entering the general relativity predictions is the one determined from satellite tracking. In the screened models, the same tracking data measure the coefficient of $1/r$ in the metric (1), i.e., $\mathcal{G}M$. A consistent comparison therefore requires evaluating the general relativity predictions with GM equal to this measured value, so that screened and general relativity predictions differ only through γ and β. This was done for LAGEOS-2, as discussed in the Letter, whereas for GP-B and the Sagnac setup the general relativity predictions were evaluated with the bare G, as if GM were known independently of satellite tracking. Accordingly, the definitions given below Eqs. (15), (17), and (19) should read

$$\alpha_{\rm GR} \equiv \alpha_{\rm screen}|_{\gamma\to1}, \qquad \Delta\dot{\omega}_{\rm GR} \equiv \Delta\dot{\omega}_{\rm screen}|_{\gamma\to1,\beta\to1}, \qquad \Delta\tau_{\rm GR} \equiv \Delta\tau_{\rm screen}|_{\gamma\to1},$$

with $\mathcal{G}M$ fixed to its measured value, instead of $\mathcal{G} \to G$. Hence, GP-B and the Sagnac setup probe γ only, and their corrected bounds are stronger. In addition, the Newtonian potential at the Earth's surface is $\Phi_{N,\oplus} \simeq 7.0 \times 10^{-10}$, rather than 7.4×10^{-10} as stated in the Letter.

Sagnac time delay—For an orbiting satellite, the kinematic term $v^2/2$, with $v \equiv R_{\rm orb}\Omega$, is of the same order as $\mathcal{G}M/R_{\rm orb}$ and should be retained in Eq. (18):

$$\Delta\tau_{\rm screen} = 4\pi R_{\rm orb}^2\Omega\left[1 + (1+2\gamma)\frac{\mathcal{G}M}{R_{\rm orb}} + \frac{v^2}{2}\right]. \tag{18}$$

This term is common to $\Delta\tau_{\rm screen}$ and $\Delta\tau_{\rm GR}$ and drops out of Eq. (19) at leading order, so it does not affect the bounds. Moreover, the relative uncertainty of 10^{-15} adopted in Eq. (19) should be regarded as an idealized benchmark: the clause "Because fractional frequency stability directly sets the smallest resolvable relative timing deviation," before Eq. (19) should read "As an idealized benchmark, assuming that the Sagnac delay can be measured with the same fractional

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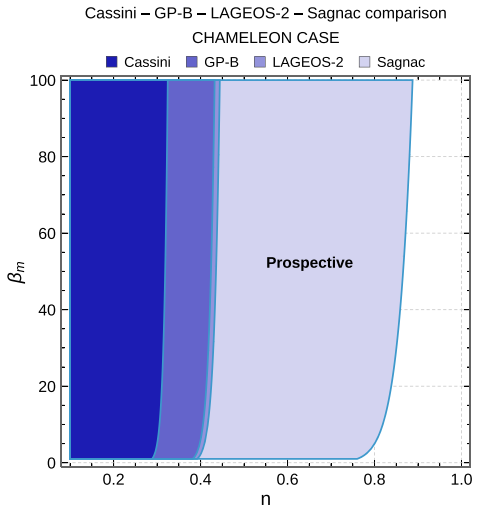


FIG. 1. Constraints on the chameleon parameter space in the plane (n, β_m) for $\Lambda = \Lambda_{\rm DE} \sim 2.4$ meV, from Cassini, GP-B, LAGEOS-2, and the prospective Sagnac setup (satellite orbit at an altitude of approximately 500 km).

precision." Likewise, the $\mathcal{O}(10^{-19})$ level mentioned in the abstract and in the conclusions refers to an assumed precision of the measured Sagnac delay, rather than to clock precision alone.

Symmetron and dilaton parameter space—The formulas for the PPN parameters considered in the Letter hold in the long-range regime $m_\infty R \ll 1$ stated below Eq. (S7) of the Supplemental Material [2]; the analogous condition at Mercury's orbit underlies the bound from Mercury's perihelion shift [1]. These conditions are not satisfied in the regions of parameter space considered in the original Figs. 2 and 3, where the scalar range is much shorter than the Earth's radius. We have therefore recomputed the constraints in regions where these conditions hold: for the symmetron, we fix $\mu = 10^{-22}$ eV and 10^{-19} eV and consider $10.5 \leq \log_{10}(M_{\rm sym}/{\rm GeV}) \leq 11.5$ and $-76 \leq \log_{10}\lambda \leq -52$; for the dilaton, we consider $-36 \leq \log_{10}\lambda_{\rm dil} \leq -23$ and $14 \leq \log_{10}A_2 \leq 23$, with the same values of V_0 as in the Letter. These regions remain largely unconstrained, apart from the bound from Mercury's perihelion shift shown in the figures, since the laboratory tests discussed in the Letter probe much larger values of μ. The corresponding statements in the text should be modified accordingly. In the corrected regions, LAGEOS-2 still provides the strongest bounds, while the prospective Sagnac bound is slightly more constraining than Mercury's perihelion shift. In the captions of Figs. 2 and 3, $R_{\rm orb} \sim 500$ km should read $R_{\rm orb} \sim R_\oplus + 500$ km.

Corrected figures—The corrected Figs. 1–3, along with their corrected captions, are shown in Figs. 1–3 of this Erratum. In Fig. 1, the GP-B and Sagnac exclusion regions are larger than in the original figure. With the replacement $\mathcal{G} \to G$, the

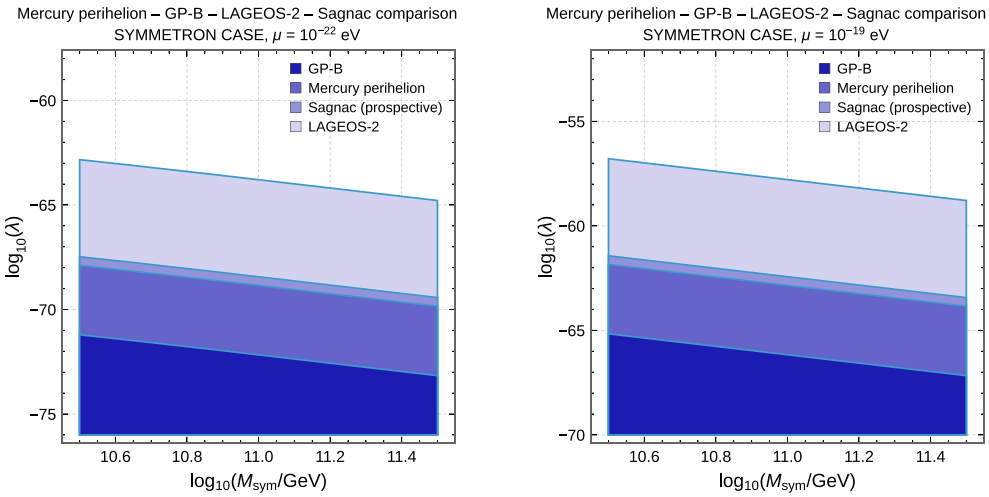


FIG. 2. Symmetron constraints for $\mu = 10^{-22}$ eV (left) and $\mu = 10^{-19}$ eV (right), from GP-B, LAGEOS-2, the prospective Sagnac setup ($R_{\rm orb} \sim R_\oplus + 500$ km), and Mercury's perihelion shift [1].

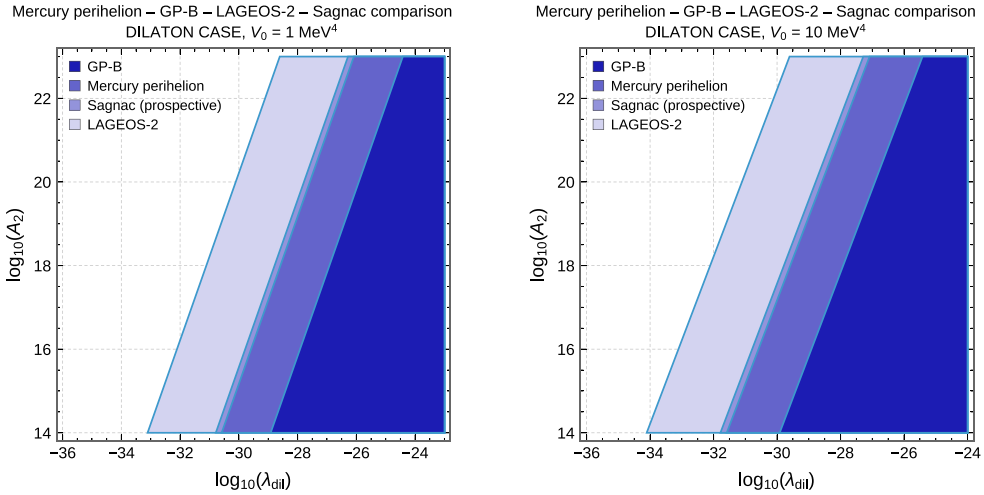


FIG. 3. Dilaton constraints for $V_0 = 1$ MeV^4 (left) and $V_0 = 10$ MeV^4 (right), from GP-B, LAGEOS-2, the prospective Sagnac setup ($R_{\rm orb} \sim R_\oplus + 500$ km), and Mercury's perihelion shift [1].

shift of $\mathcal{G}$ partially canceled the contribution of γ, reducing the predicted GP-B and Sagnac deviations by a factor of about 4; with the correct baseline, these observables probe γ alone. The Cassini and LAGEOS-2 regions are essentially unchanged.

None of these corrections changes the main conclusions of the Letter: LAGEOS-2 provides the strongest Earth-orbit bounds on the symmetron and dilaton, the prospective Sagnac setup gives the tightest chameleon constraint, and an assumed delay precision of $\mathcal{O}(10^{-19})$ would exclude the entire region of chameleon parameter space considered.

[1] X. Zhang, W. Zhao, H. Huang, and Y. Cai, Phys. Rev. D **93**, 124003 (2016).
[2] See Supplemental Material at http://link.aps.org/supplemental/10.1103/gss2-qpp1.