**Erratum: Constraints on dark matter-nucleon effective couplings
in the presence of kinematically distinct halo substructures
using the DEAP-3600 detector
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In the article, the Non-Relativistic Effective Field Theory (NREFT) rate calculations were determined using the WIMpy_NREFT software [1], which was updated on September 29, 2021, to include a previously missing $(q/m_N)^2$ factor in the implementation. This update affects the results related to the $\mathcal{O}_3$ operator that now scales as $(q/m_N)^4$ instead of $(q/m_N)^2$. The corrections to Figs. 2, 6, 9, 10, and 11 are presented below. The couplings to $\mathcal{O}_3$ constrained by this analysis are higher than those reported in the article. Additionally:

- (i) In Sec. VA, operator $\mathcal{O}_3$ is suppressed at low recoil energies, exhibiting now a peak around 50 keV (Fig. 2).
- (ii) The third paragraph in Sec. VB should read as follows: “The operator $\mathcal{O}_3$ is proportional to $(q/m_N)^4$, while $\mathcal{O}_{11}$ goes as $(q/m_N)^2$. $\mathcal{O}_3$ is described by the Φ'' multipole operator [discussed in Eqs. (9) and (10)], while $\mathcal{O}_{11}$ is described by M . Since the former operator is related to spin-orbit coupling, it couples to the two unpaired neutrons and proton holes in ^{40}Ar , rather than to all 40 nucleons. This leads to a suppression of $\sim 10^2$ in addition to the extra q^2 suppression.”

FIG. 2. Corrected recoil spectra for $\mathcal{O}_3$ ($3.1 \times 10^{-38} \text{ cm}^2$, green).

FIG. 6. Corrected upper limits (IS, IV, XP) for operator $\mathcal{O}_3$ (green).

- (iii) In Sec. V F, the statement “Operators that introduce a factor of q^2 to the DM response function, such as $\mathcal{O}_3$, $\mathcal{O}_5$, and $\mathcal{O}_{11}$ change the shape of the recoil energy spectrum, compared to $\mathcal{O}_1$ ” should read “Operators that introduce a factor of q^2 or q^4 to the DM response function, such as $\mathcal{O}_3$, $\mathcal{O}_5$, and $\mathcal{O}_{11}$ change the shape of the recoil energy spectrum, compared to $\mathcal{O}_1$.”
- (iv) The sentence in Sec. VI “Constraints on operators proportional to $v_\perp$ are weaker than those proportional to q , which are weaker than those proportional to neither” should read “Constraints on operators proportional to $v_\perp^n$ are weaker than those proportional to q raised to the same power, which in turn are weaker than constant couplings.”
- (v) In Sec. VI, exclusion curves on $\mathcal{O}_3$ and data to reproduce its recoil energy spectra were uploaded to a new Zenodo version [2].

The updated rate calculations for all NREFT operators are also found to be in agreement with results from the dmdd (dark matter direct detection) software developed by Gluscevic *et al.* [3,4]. We thank Chris Cappiello for identifying and notifying us of the error in WIMpy_NREFT.

FIG. 9. Corrected upper limits (90% C.L.) for the $\mathcal{O}_3$ operator (green).

FIG. 10. Corrected upper limits (90% C.L.) for the $\mathcal{O}_3$ operator (green).

FIG. 11. Summary plots with corrected $\mathcal{O}_3$ constraints (90% C.L.).

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