Erratum: Improved Isotope-Shift-Based Bounds on Bosons beyond the Standard Model through Measurements of the $^2D_{3/2} - ^2D_{5/2}$ Interval in Ca^+ [Phys. Rev. Lett. 125, 123003 (2020)]

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In the text as well as in Fig. 1, we stated that the frequency comb was locked to an optical reference during the spectroscopic measurements of the $4s\ ^2S_{1/2} \leftrightarrow 3d\ ^2D_{5/2}$ transition. However, the data presented in this Letter were obtained with the frequency comb's repetition rate phase locked to a direct digital synthesizer (DDS) instead, with the DDS referenced to the global positioning system (GPS)-disciplined rubidium standard. This locking scheme, using the DDS, has actually been taken into account for the analysis. For instance, this is reflected by the 2-kHz uncertainty on the transition measurements in Table I of this Letter, which corresponds to the 5×10^{-12} fractional uncertainty of our GPS-disciplined rubidium standard. The mistake in the text has no implication for the results, neither presented data nor conclusions drawn from them.

To fully correct the error, Fig. 1 with its caption should be replaced with the new figure and caption provided here, and the text on the bottom of the second page of this Letter and on top of the third page, which reads as follows:

“The absolute laser frequency is measured by beating this laser with one tooth of the frequency comb with the latter locked to an acetylene-stabilized ultrastable fiber laser (*Stabilaser* from Denmark's National Metrology Institute [25,26]) These measurements are limited by the relative inaccuracy of our GPS-disciplined rubidium standard which was measured against the *Stabilaser* to be 5×10^{-12} .”

should be replaced with the following:

“The absolute laser frequency is adjusted by an acousto-optic modulator (AOM) and measured by beating this laser with one tooth of the frequency comb with the comb's repetition rate phase locked to a direct digital synthesizer These measurements are limited by the relative inaccuracy of our GPS-disciplined rubidium standard which was measured against an acetylene-stabilized ultrastable fiber laser (*Stabilaser* from Denmark's National Metrology Institute [25,26]) to be 5×10^{-12} .”

FIG. 1. Schematic of the experimental setup and the relevant electronic levels of the Ca^+ ion. The isotope shift of the 732-nm transition can be deduced from the isotope shifts of the 729-nm transition and of the D-fine-structure splitting. The D-fine-structure splitting is measured successively on the different calcium isotopes by direct frequency-comb Raman spectroscopy [18]. The transition frequency is deduced from the measurement of the comb's repetition rate on a frequency counter referenced to a GPS-disciplined rubidium standard. The 729-nm laser used to probe the $4s\ ^2S_{1/2} \leftrightarrow 3d\ ^2D_{5/2}$ transition is frequency shifted by an AOM and is locked to an ultrastable high-finesse cavity providing a short-term linewidth < 1 kHz. The absolute laser frequency is adjusted by a second AOM and deduced from a measurement on the frequency counter of the beating between the laser and the frequency comb. For both transition measurements, the frequency comb's repetition rate is phase locked to a DDS referenced to the GPS-disciplined rubidium standard.