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Erratum

Erratum to: Reevaluation of the hadronic contributions to the muon $g-2$ and to $\alpha(M_Z^2)$

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Erratum to: Eur. Phys. J. C (2011) 71:1515
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Our above-mentioned publication [Eur. Phys. J. C 71:1515 (2011)] contains a mistake in the central value of the $K\overline{K}\pi$ contribution (set accidentally to zero) to the running of the electromagnetic coupling constant at the Z-boson mass, $\alpha(M_Z^2)$, which affects the final evaluation of this quantity. With the corrected $\alpha(M_Z^2)$, the shift in the Higgs mass obtained from the global electroweak fit amounts to +7 GeV (instead of the +12 GeV given in our publication) with respect to previous evaluations of $\alpha(M_Z^2)$.

The following items in Eur. Phys. J. C 71:1515 (2011) should be corrected.

- *The last two sentences of the abstract should read*: For the e^+e^--based five-quark hadronic contribution to $\alpha(M_Z^2)$ we find $\Delta\alpha^{(5)}_{\rm had}(M_Z^2) = (275.7 \pm 1.0)\cdot 10^{-4}$. The reduced electromagnetic coupling strength at M_Z leads to an increase by 7 GeV in the central value of the Higgs boson mass obtained by the standard Gfitter fit to electroweak precision data.
- *In Table 2, the line giving the "$K\overline{K}\pi$ (partly from isospin)" contribution should read* $0.76 \pm 0.02 \pm 0.04 \pm 0.02$ *in the rightmost column* ($\Delta\alpha_{\rm had}(M_Z^2)$). *The corresponding "Sum" contribution (last line) should read* $274.97 \pm 0.17 \pm 0.78 \pm 0.37 \pm 0.18_{\psi} \pm 0.52_{\rm QCD}$.
- *Equation (24) should read*:

$$\Delta\alpha_{\rm had}\big(M_Z^2\big) = (275.0 \pm 1.0)\cdot 10^{-4}, \tag{1}$$

- *In the paragraph after (24) it should read*: The corresponding τ-based result reads $\Delta\alpha_{\rm had}(M_Z^2) = (276.1 \pm 1.1)\cdot 10^{-4}$.
- *Equation (25) should read*

$$\alpha^{-1}\big(M_Z^2\big) = 128.952 \pm 0.014. \tag{2}$$

- *Figure 10 and caption should appear as*

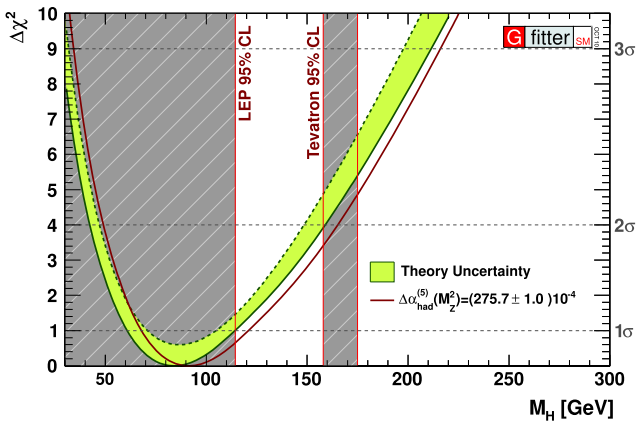

Fig. 10 Standard Gfitter electroweak fit result [55] (*green shaded band*) and the result obtained for the new evaluation of $\Delta\alpha_{\rm had}(M_Z^2)$ (*red solid curve*). The legend displays the corresponding five-quark contribution, $\Delta\alpha^{(5)}_{\rm had}(M_Z^2)$, where the top term of $-0.72\cdot 10^{-4}$ is excluded. A shift of +7 GeV in the central value of the Higgs boson is observed

- *In the paragraph after (25) it should read*: The fitted Higgs mass shifts from previously 84^{+30}_{-23} GeV to 91^{+30}_{-23} GeV. The stationary error of the latter value, in

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spite of the improved accuracy in $\Delta\alpha_{\rm had}(M_Z^2)$, is due to the logarithmic M_H dependence of the fit observables. The new 95% and 99% upper limits on M_H are 163 GeV and 193 GeV, respectively.

- *In the "Conclusions" section it should read*: ... while—on the other hand—relaxes the tension between the direct Higgs searches and the electroweak fit by 7 GeV for the Higgs mass.