Erratum: CP-violation in the ZZZ and ZWW vertices at e^+e^- colliders in Two-Higgs-Doublet Models

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We have been made aware of a sign error in this paper. Equation (3.4) should read

$$
\begin{aligned}
f_4^Z(p_1^2) = {} & \frac{2\alpha}{\pi \sin^3(2\theta_{\mathrm{W}})} \frac{M_Z^2}{p_1^2 - M_Z^2} \frac{e_1 e_2 e_3}{v^3} \\
& \times \sum_{i,j,k} \epsilon_{ijk} \big[C_{001}(p_1^2, M_Z^2, M_Z^2, M_i^2, M_j^2, M_Z^2) + C_{001}(p_1^2, M_Z^2, M_Z^2, M_Z^2, M_j^2, M_k^2) \\
& + C_{001}(p_1^2, M_Z^2, M_Z^2, M_i^2, M_Z^2, M_k^2) - C_{001}(p_1^2, M_Z^2, M_Z^2, M_i^2, M_j^2, M_k^2) \\
& - M_Z^2 C_1(p_1^2, M_Z^2, M_Z^2, M_i^2, M_Z^2, M_k^2) \big].
\end{aligned}
\tag{3.4}
$$

The last term, being the dominant one, and arising from the HHZ diagram, comes with the opposite sign.[1]

Also, equation (A.4) should have the opposite sign:

$$
e \frac{p_1^2 - M_Z^2}{M_Z^2} f_4^{Z,HHZ} = -8 M_Z^2 N_H e_1 e_2 e_3 \sum_{i,j,k} \epsilon_{ijk} C_1(p_1^2, M_Z^2, M_Z^2, M_i^2, M_Z^2, M_k^2).
\tag{A.4}
$$

This sign correction impacts figure 2.

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[1]We are grateful to the authors of ref. [1] for pointing this out.
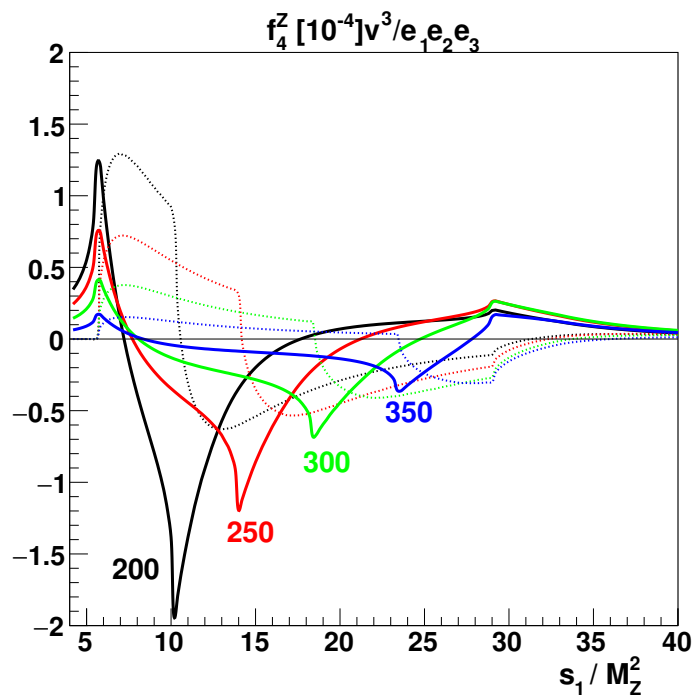
Figure 2. Real (solid lines) and imaginary (dashed) part of the form factor f_4^Z (divided by $e_1 e_2 e_3 / v^3$) as a function of p_1^2 / M_Z^2, for $p_2^2 = p_3^2 = M_Z^2$ and four values of neutral-Higgs masses M_2, as indicated (in GeV). Below threshold, $s_1 = p_1^2 = 4M_Z^2$, the function is not defined.

References

[1] H. Bélusca-Maïto, A. Falkowski, D. Fontes, J.C. Romão and J.P. Silva, *CP violation in 2HDM and EFT: the ZZZ vertex*, [arXiv:1710.05563] [INSPIRE].