Erratum: Improved bounds on universal extra dimensions and consequences for Kaluza-Klein dark matter [Phys. Rev. D 73, 095002 (2006).]

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In combining our calculation of the Kaluza-Klein (KK) contribution to the $\hat{S}$, $\hat{T}$, $\hat{U}$, W, X, Y observables with the LEPII constraints and SM contributions as discussed by Barbieri, *et al.* [1] we were unaware that Ref. [1] uses an opposite definition of the sign of all self-energies Π_{XY} compared to the standard convention. In consequence, our KK contributions to the EWPO are wrong by this sign. The corrected contributions to the $\hat{T}$ parameter are shown in Fig. 1 (left).

Our relative sign error between the SM contributions given in [1] and the KK-contributions to the EWPO has a major impact on the fit to the measured values for the EWPO. The corrected fit is given in Fig. 1 (right). As a consequence, the full analysis of the EWPO contributions including the 2-loop SM corrections do not yield a substantial improvement of the constraints on the compactification radius. For a heavy Higgs $m_H \sim 800$ GeV, an inverse compactification radius of 300 GeV is in accord with our corrected analysis. Our corrected results are in agreement with the recent analysis of Gogoladze and Macesanu [2] (for a top mass of 178 GeV, the value assumed in Ref. [1]).

The discussion of the prospects of direct and indirect detection of KK dark matter and its' dependence on the compactification radius in Section V remains fully correct. The analysis of LKP dark matter in the heavy ($1/R \gtrsim$ 500 GeV) KK limit is directly relevant if either the Higgs is found to be light or direct bounds on $1/R$ from the Tevatron or LHC exceed ~500 GeV.

We are very grateful to Ilia Gogoladze and Cosmin Macesanu for discussions of their analysis [2], and we thank Carlos Wagner and the authors of Ref. [2] for follow-up communications which helped us to identify our error.

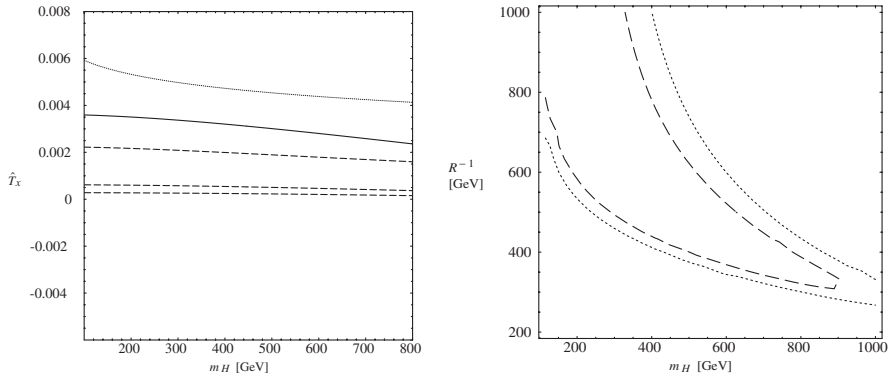

FIG. 1. Correction of Fig. 2 (left) and Fig. 3 (right) of the original paper. (a) The contribution to $\hat{T}$ from the first three KK levels (dashed lines) for $M_c = 400$ GeV as a function of Higgs mass, as well as the sum over the first 10 KK modes (solid line) and the numerically-interpolated Higgs- dependent correction (dotted line) $\epsilon_{1,SM}$. (b) The 95% (dashed line) and 99% (dotted line) confidence limit exclusion zones for the UED model, as a function of Higgs mass in the range 115 GeV to 1 TeV, and mass $M_1 = 1/R$ of the lightest KK excitation in the range 200 GeV to 1 TeV.

[1] R. Barbieri, A. Pomarol, R. Rattazzi, and A. Strumia, Nucl. Phys. **B703**, 127 (2004).
[2] I. Gogoladze and C. Macesanu, hep-ph/0605207.

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