Erratum: Stringent New Bounds on Supersymmetric Higgs Bosons from Existing Tevatron Data


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[S0031-9007(98)07118-X]

There is an error in our reported calculation of the cross section for associated $b\bar{b}$ Higgs production in hadron colliders. After correction, the cross section at the Tevatron is reduced by a factor of about 10. (Our calculations have been performed by choosing the Higgs mass as the QCD scale and CTEQ3L structure functions; there could be an uncertainty of up to 50% due to choices.) This weakens (increases) the upper bound on tan $\beta$ that can be derived from the existing CDF data [1] by slightly more than a factor of 3. The excluded region, in the plane spanned by the MSSM parameters $m_A$ and tan $\beta$, is shown in Fig. 1, which corrects Fig. 2 of our original Letter. We are still able to extend the region that can be excluded from a consideration of $t \rightarrow H^+$ decays [2], though our upper bound on tan $\beta$ is always above 80. However, a similar analysis, applied to the forthcoming data on $b\bar{b}\tau\tau$ final state events from RUN 2 at the Tevatron, should be able to lead to much stronger conclusions.

We thank Steve Mrenna for alerting us to the problem in our calculation and Michael Spira for providing us with results of his independent calculation.


FIG. 1. Constraints on the MSSM Higgs section in the $(m_A, \tan \beta)$ plane. The region $m_A < 75$ GeV is excluded by Higgs searches at the LEP collider. The region above the dashed curve is excluded by an analysis [1] of top quark decays. The region above the solid line is excluded by our analysis using CDF limits on $b\bar{b}\tau^+\tau^-$ final states. For tan $\beta \gg 1$, the $CP$-odd scalar $A$ is nearly degenerate with either the light $CP$-even scalar $h$ or the heavy $CP$-even state $H$; the crossover occurs between 100 and 125 GeV, depending on the details of the sparticle spectrum.