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Combined upper limits on Higgs boson production in the Standard Model, fourth generation and fermiophobic models in proton-antiproton collisions at 1.96 TeV at the Tevatron

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The combined results from CDF and D0 on direct searches for the standard model (SM) Higgs boson H in pp-bar collisions at the Fermilab Tevatron at sqrt(s)=1.96 TeV are presented. Compared to the previous Tevatron Higgs search combination more data have been added, additional new channels have been incorporated, and some previously used channels have been reanalyzed to gain sensitivity. We use the latest parton distribution functions and gluon fusion to Higgs theoretical cross sections when comparing our limits to the SM predictions. In addition to limits on the SM, the results are interpreted in the context of a fermiophobic model in which the diphoton and WW final states are enhanced and also in the context of a model in which the gluon fusion production mode is enhanced by the existence of a fourth generation of fermions. With up to 8.0 fb-1 of data analyzed at CDF and D0, the 95% C.L. upper limits on Higgs boson are calculated.

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