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Search for Neutral Supersymmetric Higgs Bosons in bbb(b) Final States in ppbar Collisions at sqrt(s)=1.96 TeV

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We present a search for Higgs bosons in the bh(h−>bbar) and bbh(h−>bbar) channels at a center-of-mass energy of sqrt(s)=1.96 TeV with the D0 detector at the Fermilab Tevatron collider. In many Supersymmetric models the cross-section for production of neutral Higgs bosons in association with bottom quarks is greatly enhanced compared to the Standard Model, and over much of the parameter space the dominant decay mode is into a pair of bottom quarks. The search is performed in events with 3 and 4 identified b jets and uses the full D0 Run 2 dataset. Currently this search is only performed at the Tevatron and thus provides unique complementary information to searches for Supersymmetric Higgs bosons decaying into tau pairs at the LHC. The sophisticated techniques to model the dominant multijet background, as well as the multivariate techniques used to both efficiently select the signal and suppress the background, will be discussed in detail.

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