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Jet Energy Resolution in Higgs Boson Searches at the D0 Experiment SAVANNA SHAW, Michigan State University, D0 COLLABORATION — Standard model Higgs boson searches at the D0 experiment at the Fermilab Tevatron collider are primarily sensitive to associated production of the Higgs boson with a vector boson where the Higgs boson decays to a pair of b-quarks, when the mass of the Higgs boson is $M_H < 135$ GeV. The most powerful variable for separating signal from background events in $H \to b\bar{b}$ searches is the invariant mass of the dijet system. The resolution with which we can reconstruct this mass depends strongly on the energy resolution of our jets. This jet energy resolution depends on the resolution of our calorimeter, as well as properties of the jet such as whether a jet contains a neutrino from the decay of a b quark. We will present the techniques used to improve the jet energy resolution, and show how these improvements affect the sensitivity of the search for the Higgs boson using the D0 detector.

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