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Combined Search for the Standard Model Higgs Boson at D0 in ppbar Collisions at $\sqrt{s}=1.96$ TeV

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We present the combination of the searches for the Standard Model Higgs boson at a center-of-mass energy of $\sqrt{s}=1.96$ TeV, using the full Run 2 dataset collected with the D0 detector at the Fermilab Tevatron collider. The major contributing processes include associated production ($WH \rightarrow lvbb$, $ZH \rightarrow vvbb$, $ZH \rightarrow llbb$, and $WH \rightarrow WWW()$) and *gluon fusion* ($gg \rightarrow H \rightarrow WW()$). The significant improvements across the full mass range resulting from the larger data sets, improved analyses and inclusion of additional channels are discussed. The combination of all channels results in significantly improved sensitivity across the 100-200 GeV mass range.

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