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Associated Higgs plus vector boson test of a fermiophobic Higgs boson

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Abstract:

Higgs production in association with an electroweak vector boson is a distinctive channel for a Higgs boson without tree-level couplings to fermions, known as a fermiophobic Higgs. We demonstrate that existing LHC data at 7 TeV with 4.9 fb^{-1} may distinguish fermiophobic Higgs from a standard model Higgs in the $\gamma\gamma\text{-}j\text{-}j$ final state at 1.9 sigma. At a 8 TeV LHC, we predict 2.8 sigma distinction is possible with 10 fb^{-1} of data.

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