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Evolutionary Neural Network Based Analysis of the ZH to ll bb channel RAVI SHEKHAR, ASHUTOSH KOTWAL, BO JAYATILAKA, Duke University, DANIEL WHITESON, University of California Irvine, THE CDF COLLABORATION COLLABORATION — We present a new technique for the standard model Higgs search in the $ZH \to l\bar{l}b\bar{b}$ decay channel using a genetically-evolved artificial neural network to optimize for sensitivity on 2 fb^{-1} of CDF II data. Our method is based on a maximum-likelihood fit for the ZH fraction in the data sample, using the standard model matrix-element probabilities to construct a likelihood function. This method is augmented with evolved neural networks to maximize the sensitivity to the ZH signal. We will present the methodology and illustrate the gains from the use of the evolved neural network.

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