Improving the Higgs Mass Resolution by Using a Neural Network to Make Jet Corrections in the ZH –> l+l-bb Channel JESSICA HANZLIK, The Ohio State University, THE COLLIDER DETECTOR AT FERMILAB COLLABORATION — The search for the Higgs boson is of great interest, with a variety of searches ongoing at the CDF and D0 experiments at the Tevatron at Fermilab, as well as planned searches in theupcoming LHC detectors ATLAS and CMS. At Fermilab, one primary mode for a low mass Higgs is via ZH production. In this channel, the Z boson (Z) decays into a lepton pair, and the Higgs boson (H) decays into a bottom quark and an anti-bottom quark pair. The leptons can be accurately detected and measured, whereas the quarks decay into jets, which are more difficult to measure accurately. This analysis investigates the use of the precise measurements of the leptons to improve the measurement of the individual jets, and thus the determination of the resulting Higgs mass. The method we investigate involves the use of Artificial Neural Networks. We present expected improvements in Higgs mass resolution at CDF.

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