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Multivariate techniques for $VH \rightarrow \text{MET} + b\bar{b}$ Searches at CDF

DOUG SHAEFER, Ohio State University, CDF COLLABORATION — We present improved techniques applicable to searches for a Higgs boson in events with missing transverse energy and two b-quark jets at CDF. This sample includes substantial contributions from both ZH and WH final states, as well as substantial backgrounds originating from QCD multi-jets, $t\bar{t}$ production, heavy diboson production, and instrumental backgrounds. Multivariate techniques have been shown to be extremely important in increasing the experimental sensitivity in this channel. We investigate the use of multivariate methods targeted toward rejection of specific backgrounds and how to combine these methods to form a single overall discriminant. We present expected improvements in Higgs search sensitivity using these new techniques.

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