Search for a Higgs Boson in Decays to $WW^*$ at CDF

BRITNEY RUTHERFORD, Fermi National Accelerator Laboratory, CDF COLLABORATION — We present a search for Standard Model Higgs production in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV using approximately 4 fb$^{-1}$ of data collected with the CDF II detector. We consider the diboson decay channel, $H \rightarrow WW$, which is the dominant decay mode for Higgs boson masses above 140 GeV/$c^2$. We further require both $W$ bosons to decay leptonically. Both single and associated Higgs production modes are considered. In order to maximize sensitivity, a combined Matrix Element method and Neural Network approach is utilized to distinguish signal from background processes. Cross-section limits are presented for Higgs mass hypothesis between 110 GeV/$c^2$ and 200 GeV/$c^2$. 

Eric James
Fermi National Accelerator Laboratory

Date submitted: 09 Jan 2009  
Electronic form version 1.4