Abstract

CDF collaboration searched for W pair production in the dilepton channel, $W^+W^- \to \ell\nu\ell\nu$, and reported an evidence in 1996. CDF found five signal candidate events while the expected number of background events is 1.2 ± 0.3, and extracted the cross section $\sigma(p\bar{p} \to W^+W^-) = 10.2^{+6.3}_{-5.1}(\text{stat}) \pm 1.6(\text{syst})$ pb.

In the present study, we search for W^+W^- production in the lepton plus dijet channel, $W^+W^- \to \ell\nu jj$, using 106 pb^{-1} data sample. To separate signals from backgrounds we use conventional variables that discriminate between quark and gluon jets, such as jet charge, track multiplicity, and charm-jet tagging. In addition, we study variables taking advantage of event characteristics that are specific to the W^+W^- final state, such as pseudo-rapidity asymmetry, azimuthal correlations, and dijet mass. We set a 95% C.L. upper limit of 61 pb on the W^+W^- production cross-section.