

Selection Cut	e +jets	μ +jets	e +jets/ μ b -tag	μ +jets/ μ b -tag
Lepton P_T	> 20 GeV	> 15 GeV	> 20 GeV	> 15 GeV
\cancel{E}_T	> 25 GeV	> 20 GeV	> 20 GeV	> 20 GeV
Number of Jets	≥ 4	≥ 4	≥ 3	≥ 3
Jet E_T	> 15 GeV	> 15 GeV	> 20 GeV	> 20 GeV
Aplanarity \mathcal{A}	> 0.05	> 0.05	> 0.00	> 0.00
H_T	> 200 GeV	> 200 GeV	> 140 GeV	> 140 GeV
μ -tag P_T	–	–	> 4 GeV	> 4 GeV

Table 5: Minimum kinematic requirements for the $D\emptyset$ standard lepton+jets event selection.

backgrounds are determined directly from inclusive jet data. The remaining backgrounds are much smaller and are calculated using the techniques discussed in Ref. [4]. The efficiency of the algorithm is measured with photon conversion and $J/\psi \rightarrow \mu^+\mu^-$ data. The probability of finding an additional e or μ in a $t\bar{t}$ event with ≥ 3 jets is $(20\pm 2)\%$. Table 6 shows the background and number of observed tags for the signal region ($W + \geq 3$ jets). There are 23 tags in 22 events, with 15.4 ± 2.0 tags expected from background. Six events contain both an SVX and SLT tag, compared to the expected 4 for top+background and 1 for background alone.

4.2 $D\emptyset$ Lepton+Jets Search

The $D\emptyset$ lepton+jets analysis consists of two methods: tight kinematic cuts for the events without b -tag, and loose kinematic cuts for the events with b -tag. The $D\emptyset$ b -tag technique is to search for a muon from semileptonic b decay with the minimum transverse momentum of 4 GeV/ c . The lepton+jets sample is obtained by selecting events with one isolated lepton (e or μ), large \cancel{E}_T , and a minimum of three jets with $E_T > 20$ GeV (with muon b -tag) or four jets with $E_T > 15$ GeV (without muon b -tag). To reduce further the QCD- W +multijet background, a minimum requirement on the H_T quantity is imposed. A minimum requirement on the ‘‘aplanarity’’ of the jets \mathcal{A} , which measures the deviation from a planar momentum distribution and is proportional to the lowest eigenvalue of the momentum tensor for the observed objects (0.5: spherical events, 0.0: planar or linear events), is imposed for the lepton+jets without muon b -tag. Table 5 summarizes kinematic requirements for the lepton + jets event selection.

As shown in Fig. 10 $D\emptyset$ observes a total of 8 events (5 e +jets and 3 μ +jets) without μ b -tag after the tight kinematic cuts. The total expected background is 1.93 ± 0.55 . The