

level more information is brought together to form a decision. The trigger requirement of at least one energetic electron or muon is the primary tool used in identifying online a sample of top quark candidate events that are subsequently studied offline.

The requirement of at least one high P_T electron or muon in both CDF and DØ is imposed efficiently in the trigger. The production of leptons above a transverse energy of 15 GeV is dominated in both experiments by b and c quark production, and by inclusive W^\pm boson production. For example, in CDF, the inclusive electron trigger is implemented with the following requirements:

1. The level 1 trigger demands that at least one calorimeter trigger cell with $\Delta\phi \times \Delta\eta = 0.26 \times 0.2$ has > 6 GeV of electromagnetic energy.
2. The level 2 trigger demands that there be a charged track candidate pointing at an electromagnetic energy cluster, and requires that the cluster properties be consistent with those of an electromagnetic shower.
3. The level 3 trigger requires the presence of an electromagnetic cluster associated with a charged track reconstructed using the standard offline algorithms. Further quality cuts on the properties of the electromagnetic shower are also made.

These reduce the overall cross section of candidate events to approximately 50 nb, of which approximately 30% is comprised of real electrons. For comparison, the rate of $W \rightarrow e\nu_e$ in this sample is of order 1 nb. The efficiency of this trigger for isolated electrons with $20 < E_T < 150$ GeV is $92.8 \pm 0.2\%$.

As another example, the DØ detector triggers on a sample of inclusive muon candidates by using a two level decision process:

1. The level 1 trigger demands the presence of a charged track stub in the muon toroidal spectrometer with a $p_T > 3$ GeV/c.
2. The level 2 trigger demands a high quality muon candidate consisting of a muon candidate in the muon system matched to a charged track observed in the central tracking system. The central track candidate must be reconstructed in all 3 dimensions, must be consistent with coming from the event interaction, and must have P_T greater than 5 or 8 GeV/c, depending on the specific muon trigger.

The efficiency of this trigger is estimated to be $67 \pm 3\%$.

Both experiments employ inclusive electron and muon triggers, as well as triggers that identify smaller samples of events useful to the top search. Since the backgrounds to the dilepton sample are relatively small, it is convenient to identify the candidate events immediately in the trigger so that they can be analysed as soon as possible. A high- P_T dilepton trigger requiring at least two electron or muon candidates is therefore