Jet Multiplicity	σB (pb)	$\sigma_T B$ (pb)
0	$1740 \pm 31 \pm 288$	$1753 \pm 26 \pm 123$
1	$336 \pm 14 \pm 63$	$287 \pm 4 \pm 21$
2	$76 \pm 12 \pm 18$	$59 \pm 2 \pm 5$
3	$14 \pm 3 \pm 3$	$11.0 \pm 0.3 \pm 1.0$
4	$4.0 \pm 1.6 \pm 1.2$	$2.0 \pm 0.1 \pm 0.3$

Table 1: The W+jet production cross section times the branching ratio for $W \rightarrow l^+\nu_l$ as a function of jet multiplicity. The second column presents the observed cross sections for jets with corrected transverse energy > 15 GeV and $|\eta| < 2.4$. The third column shows the predicted QCD cross section based on a VECBOS Monte Carlo calculation.

decay, which can be similarily reduced by the requirement of a neutrino signature and additional jets.

The single largest physics background to lepton+jets final states come from inclusive W production where additional jets are produced via initial and final state radiation [14]. The intrinsic rate for this background depends strongly on the multiplicity requirements placed on the jet candidates, as shown in Table 1 where the observed W+jets production cross section is presented as a function of jet multiplicity and compared with a QCD Monte Carlo prediction [15]. One can see from these rates that this background can overwhelm a $t\bar{t}$ signal. More stringent kinematic cuts can be applied to reject the W+jets events, taking advantage of the fact that the $t\bar{t}$ final states, on average, generate higher E_T W bosons and additional jets. Alternatively, since the $t\bar{t}$ final state has two b quark jets in it, the requirement that one or more jets are consistent with arising from the fragmentation of a b quark will preferentially reduce the W+jets background. Both of these techniques have been employed.

4 The Tevatron Collider

The Tevatron Collider is a 6 km circumference proton-antiproton storage ring that creates $\bar{p}p$ collisions at a centre-of-mass energy of 1.8 TeV. In its current configuration, the collider operates with six bunches of protons and six bunches of counter-rotating antiprotons that are brought into collision at two intersection points in the ring named B0 and D0. The B0 and D0 interaction regions house the CDF and DØ detectors.

The Tevatron embarked on a multi-year collider run starting in December 1992. The first stage of the run, known as Run IA, continued through till August 1993, at which time approximately 30 pb^{-1} had been delivered to each interaction region. The second stage of the run commenced in August 1994 and will continue till the end of 1995. By February 1995, the collider had delivered an additional 80 pb^{-1} to each interaction region. The maximum luminosity of the Collider during this period has been 1.7×10^{31} cm^{-2}s^{-1}, and has been consistently increasing.