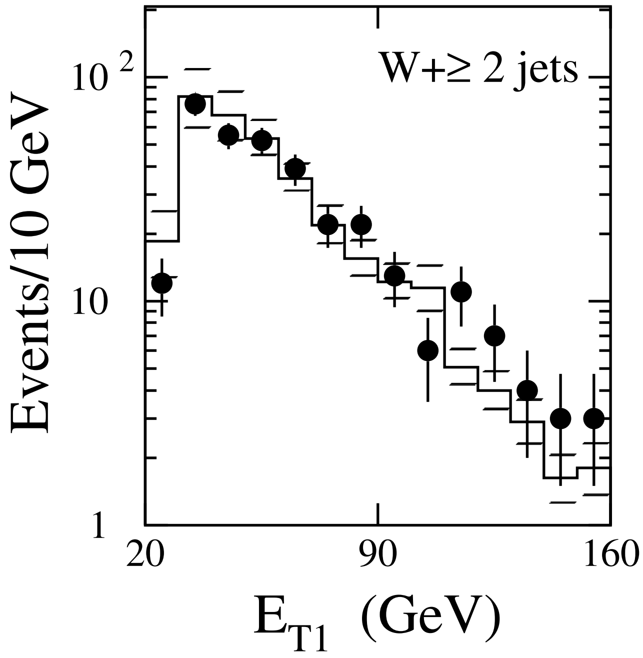

Figure 46: Distribution of transverse energies for the highest E_T jets in $W+$ 2 or more jet events. Data (points) are compared with VECBOS predictions (histogram) normalized to the data. The short horizontal error bars show the statistical uncertainty on the VECBOS predictions. There are eight data events with highest jet $E_T > 160$ GeV.

8.1 VECBOS W + Jets Predictions

We have used the VECBOS Monte Carlo program [26] to predict the properties of background events arising from QCD production of $W+$ 3 or more jets. The VECBOS program generates Monte Carlo events in which the incoming partons have interacted to produce a W boson plus a definite number of additional partons in the final state. VECBOS uses the leading order QCD matrix elements, which are calculated for up to four additional final state partons [30]. Infrared and collinear singularities are regulated by requiring that the additional final state partons have a transverse momentum exceeding a cut-off value P_T^{MIN}, and that the final state partons are separated in (η, ϕ) space by more than R_{MIN} ($R = \sqrt{(\Delta\phi)^2 + (\Delta\eta)^2}$). In our calculation we have chosen a P_T^{MIN} of 8 GeV/c and an R_{MIN} of 0.4. Our VECBOS predictions are made using the MRSD0 structure functions [54] with a Q^2 equal to the square of the average P_T of the outgoing partons. After evolution and hadronization of the initial and final state partons, the response of the CDF detector to the resulting final state particles has been simulated, and jets reconstructed using the CDF jet algorithm. This enables the sample of VECBOS Monte Carlo events to be subjected to the same cuts applied to the data. In this section, all VECBOS distributions have been normalized to have the same area as the data.