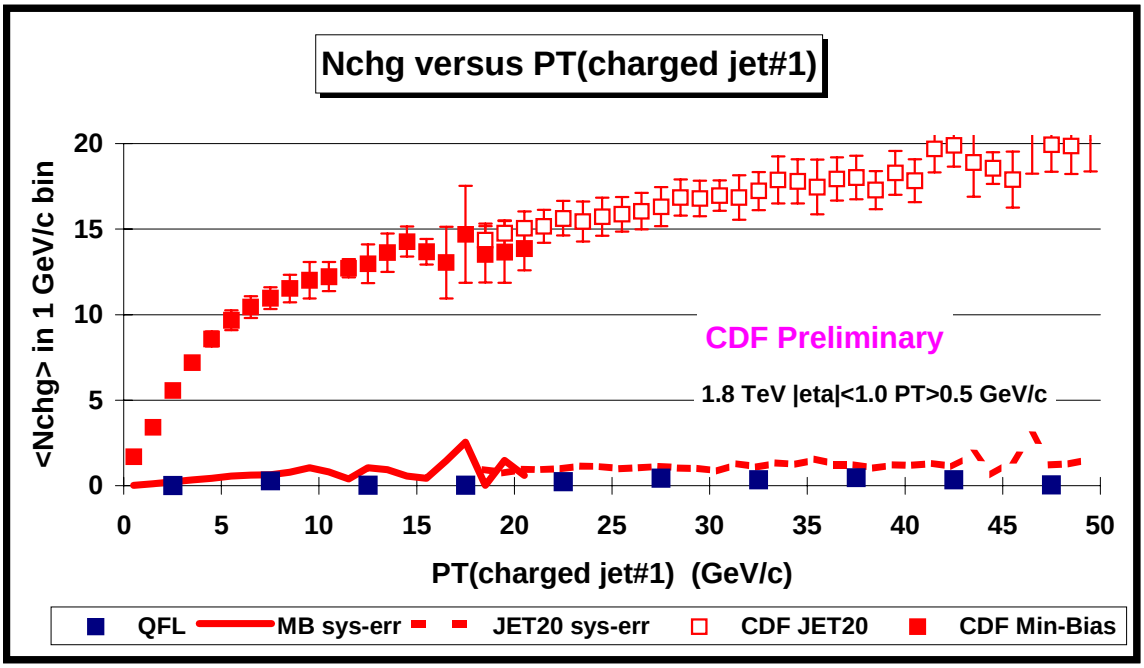
Systematic Errors

Here we compare the systematic errors determined from a QFL analysis with those determined from the data directly using impact parameter cuts.

QFL Method: Compare observable generated by PYTHIA before and after the events have been put through QFL. **SYSERR = |after-before|**

Impact Parameter Method (used in the paper): Every data point on every plot in the analysis was determined with three different CTC impact parameter, d_0, cuts: a 1 cm d_0 cut; a 0.5 cm d_0 cut; and no d_0 cut. The 1 cm cut determined the value of the data point and the difference between the 0.5 cm cut value and the no cut value of the data point was used to estimate the systematic error. **SYSERR = |(0.5 cut)-(no cut)|**

Plot 1: Average charged particle multiplicity ($P_T > 0.5$ GeV/c, $|\eta| < 1$) versus PT(chgjet#1). The solid (and dashed) curves are the systematic errors used in the paper (impact parameter method) and the solid squares are the systematic errors from the QFL method.



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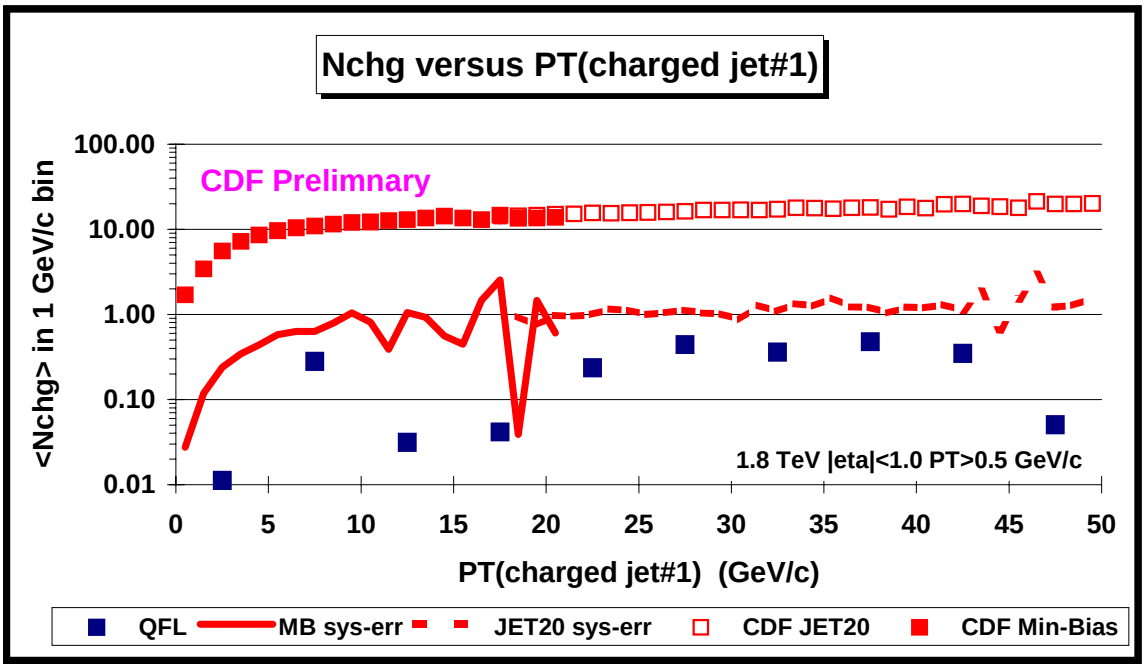
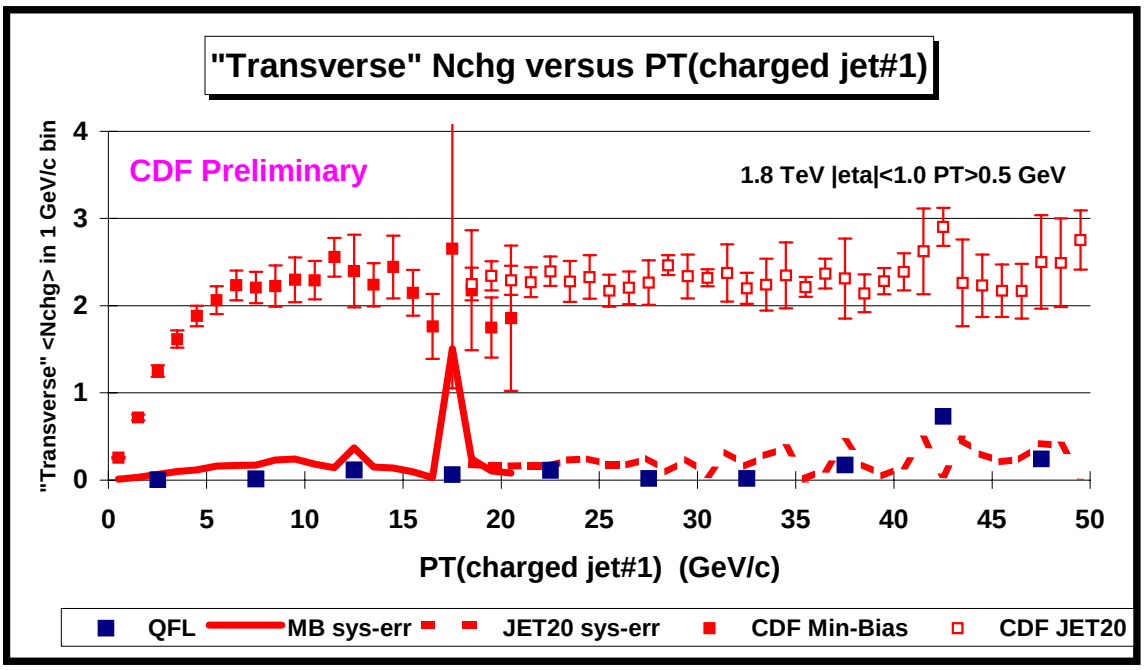
Plot 2: Same as Plot 1 except on a log arithmetic scale.



Plot 3: Average "transverse" multiplicity (P_T > 0.5 GeV/c, |η| <1) versus PT(chgjet#1). The solid (and dashed) curves are the systematic errors used in the paper (impact parameter method) and the solid squares are the systematic errors from the QFL method.



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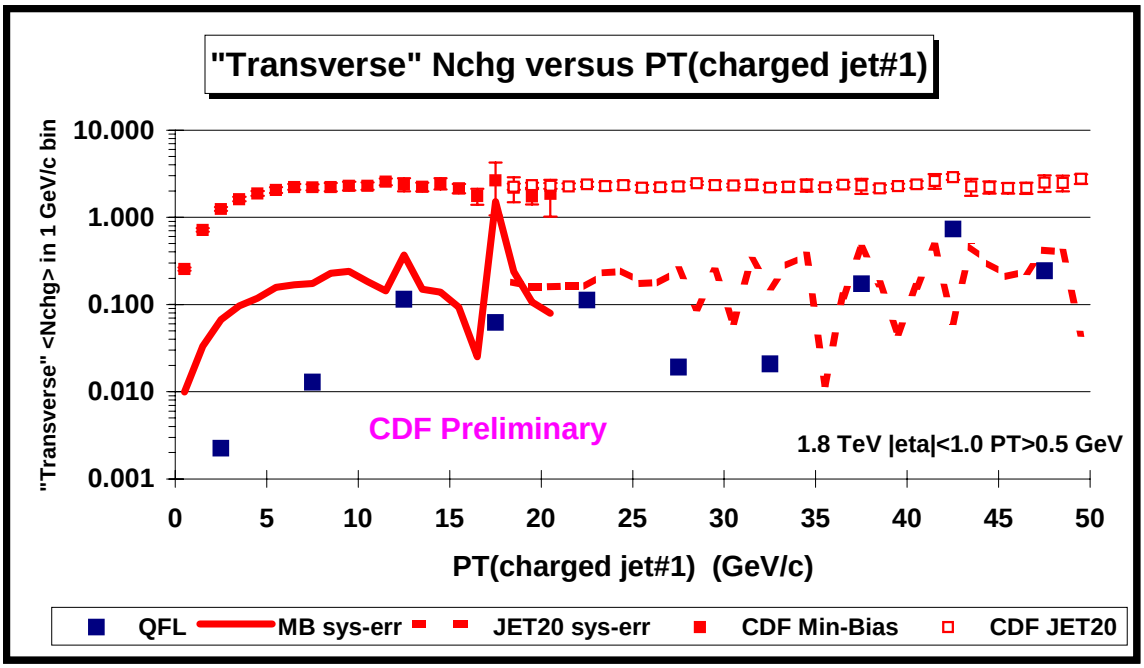
Plot 4: Same as Plot 3 except on a log arithmetic scale.



Conclusion: The systematic errors estimated from QFL are comparable to or less than the systematic errors in the paper (impact parameter method). The systematic errors estimated from QFL become large for the "transverse" <Nchg> at large PT(chgjet#1) (but are still comparable to the systematic errors in the paper). In the paper, we restricted ourselves to the region PT(chgjet#1) < 50 GeV/c, because our studies showed that for PT(chgjet#1) > 75 GeV/c substantial corrections to the data are necessary.