ABCD Method Uncertainties

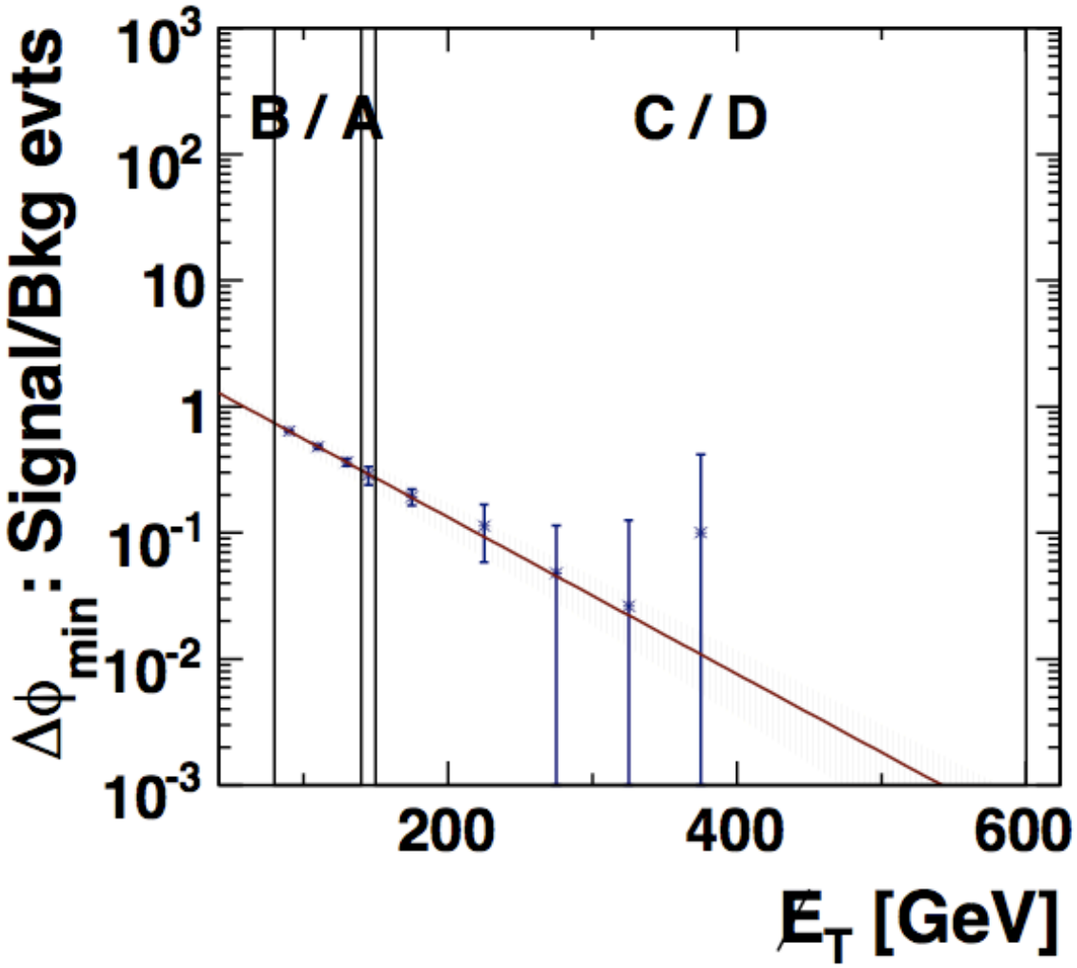
1. Statistical uncertainties

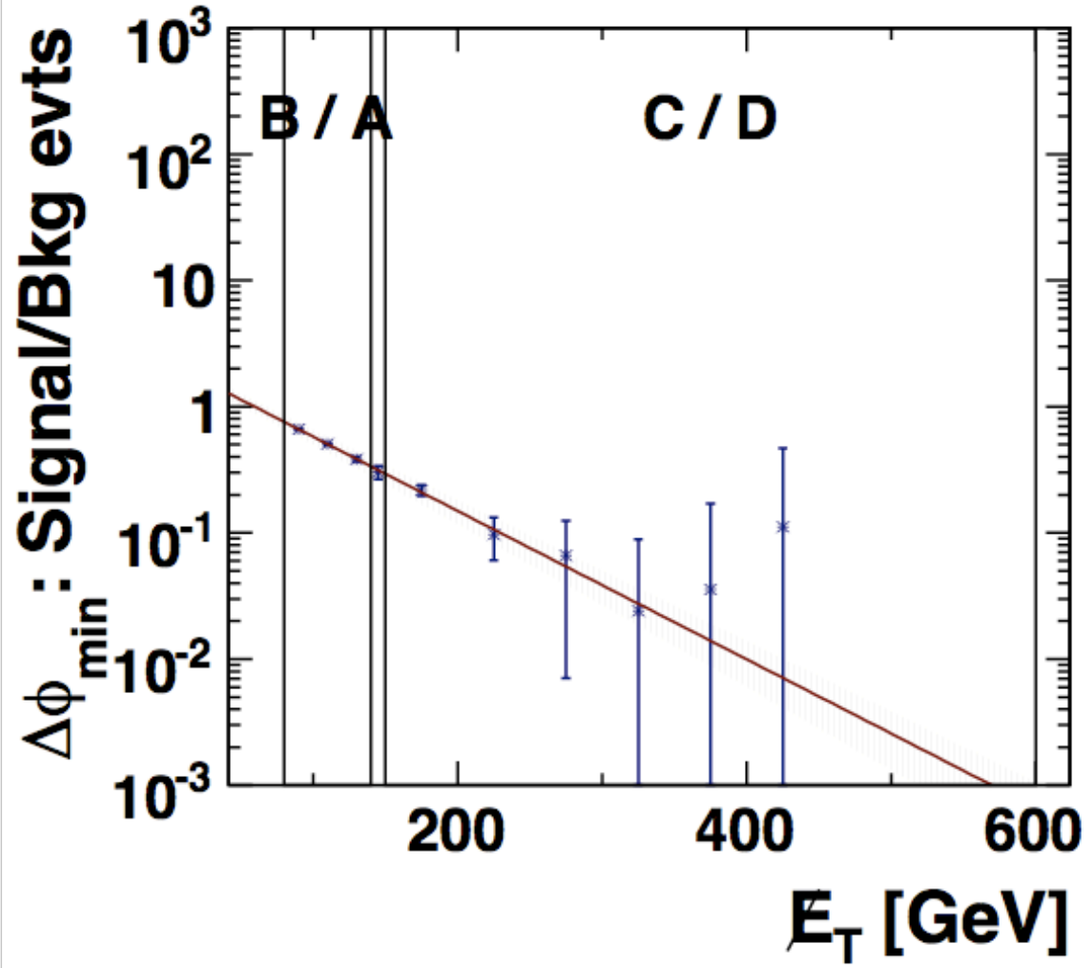
2. Robustness of the fit

3. Dominant systematic uncertainty: Jet Energy Resolution (non-Gaussian tail)

4. Contamination from other backgrounds and signal

ABCD with Jet Energy Scale uncertainty





	true QCD	estimation	stat. error	true/est
Default	91	92	± 21	1%
JES -5%	62	68	±18	10%
JES +5%	130	142	± 27	9%

Statistical uncertainties + robustness of the fit

- Error propagation for the fit parameters
- Number of events in background region D

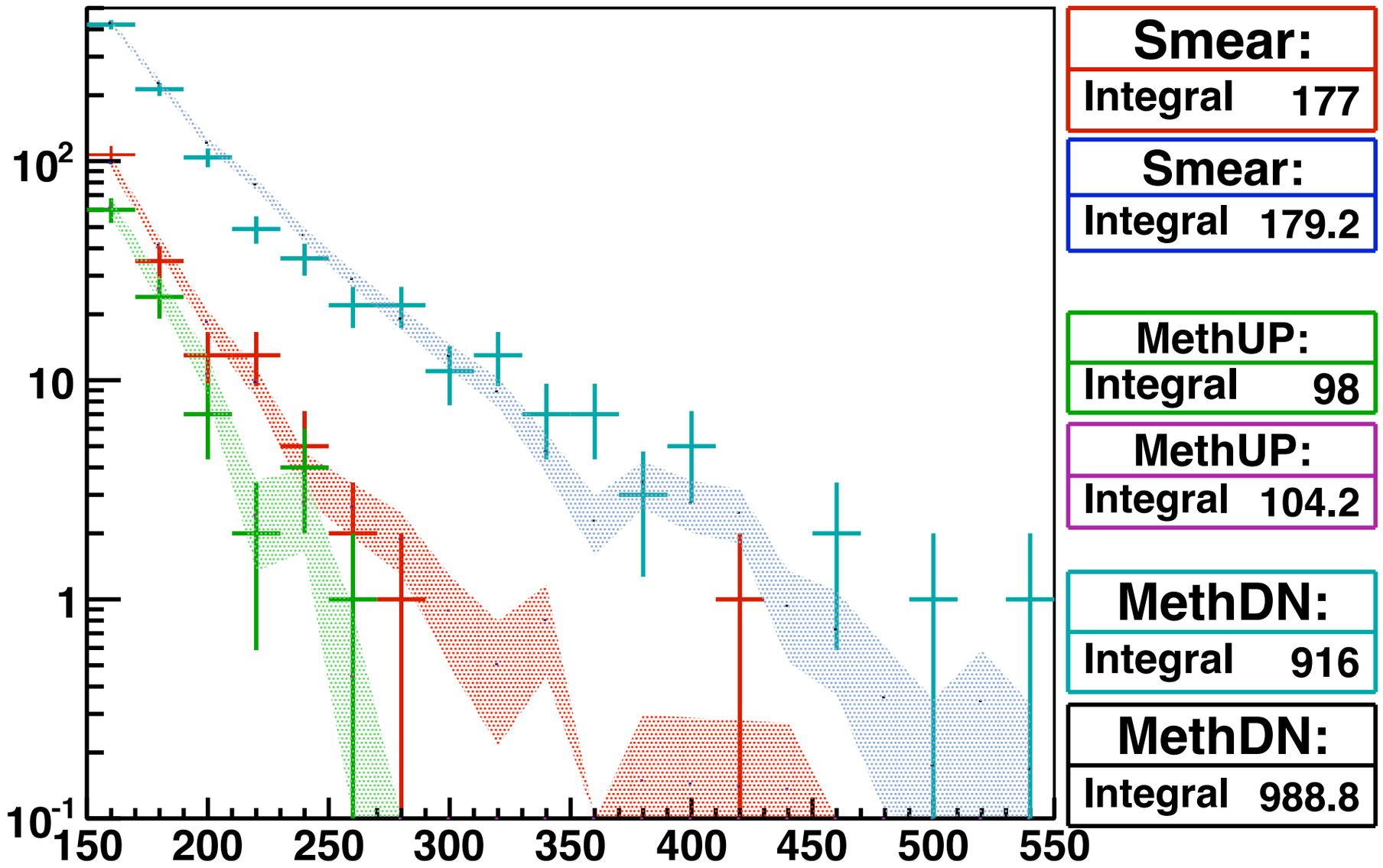
- Robustness of the fit:
  - Shifting the bins in the control region for the fit
  - Shifting the bins in region D
  - changing the bin-size
  - fit parameterization

⇒These effects should have minor influence compared to the jet scale and resolution uncertainty.

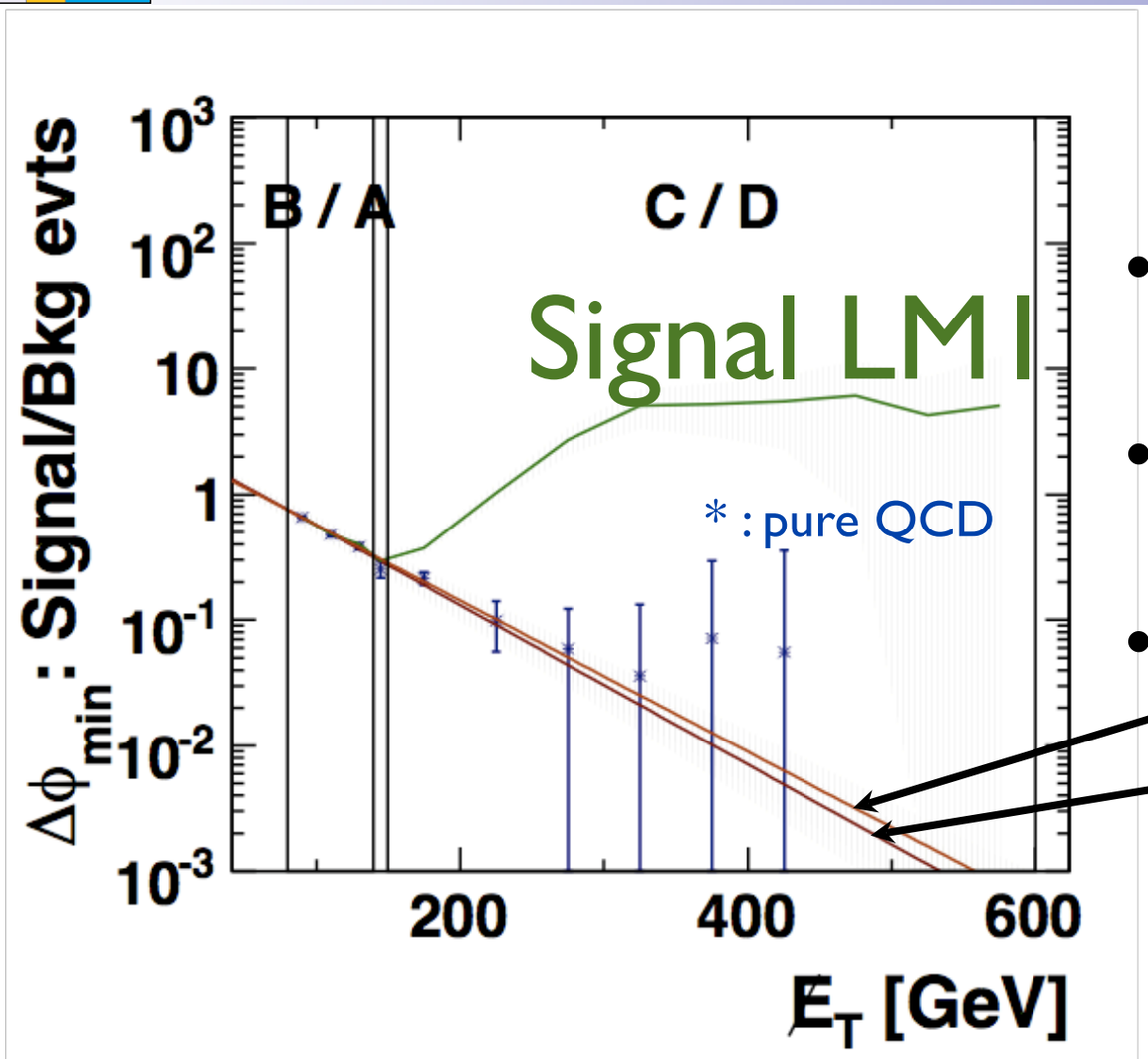
To Do: All effects with numbers for 7 TeV QCD sample and statistics scaled to different lumi scenarios, e.g. 30, 50, 100/pb

Study the dominant systematic uncertainty

MHT.MHT
MHT.MHT>150DPhiMinMht.dPhi>0.3



Adding Signal



- Signal contamination results in ≈ 10 % overestimation of QCD background
- Effect is less pronounced due to the lower MET cut (150 GeV before 200 GeV)
- Fit is only slightly affected by signal contamination

	Signal	true QCD	estimation	stat. error	true/est
Default	0	91	92	± 21	1%
+ LM 1	318	91	102	± 23	12%