

Work Status on Pile-up jets

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- pile-up jets conditions for HL-LHC
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conditions

jet p_T	reco. efficiency
30 – 35 GeV	80%
35 – 40 GeV	85%
40 – 50 GeV	90%
> 50 GeV	95%

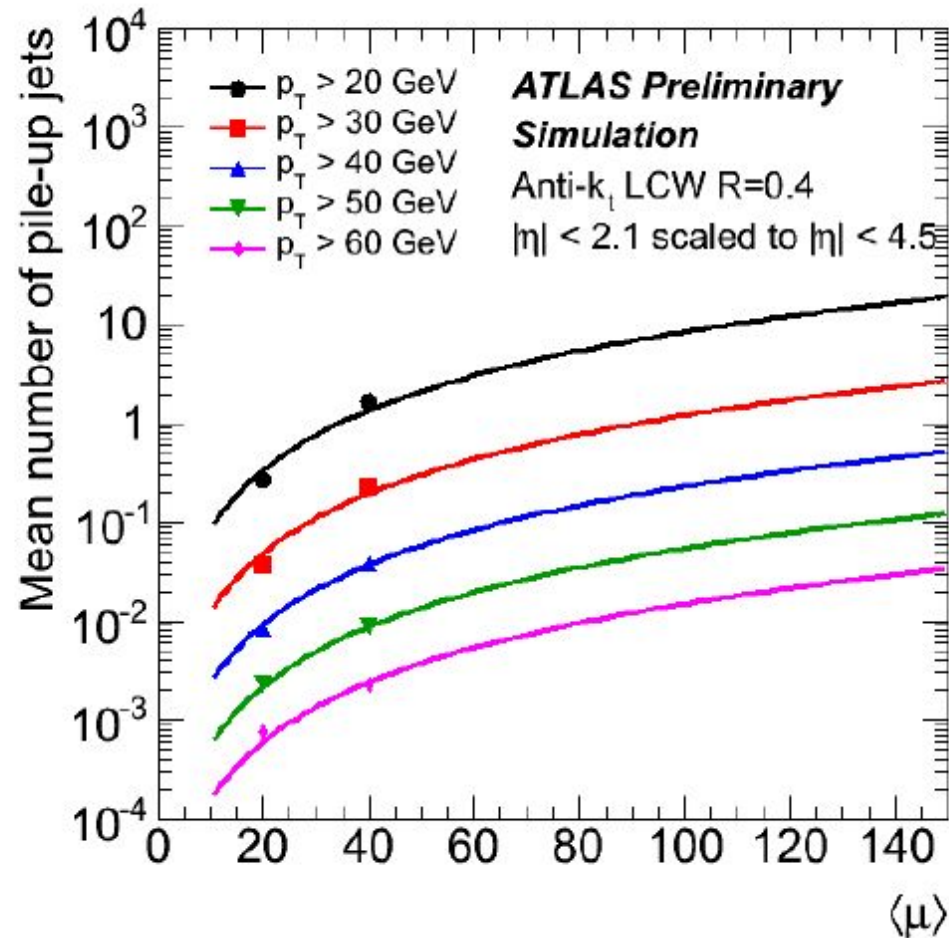
: Hard-scattering jet reconstruction efficiency.

- 98% pile-up jet suppression within tracking volume
- 50%, 75%, 90% suppression for $\text{Eta} < 3.0, 3.5, 4.0$, respectively

impacts on observables

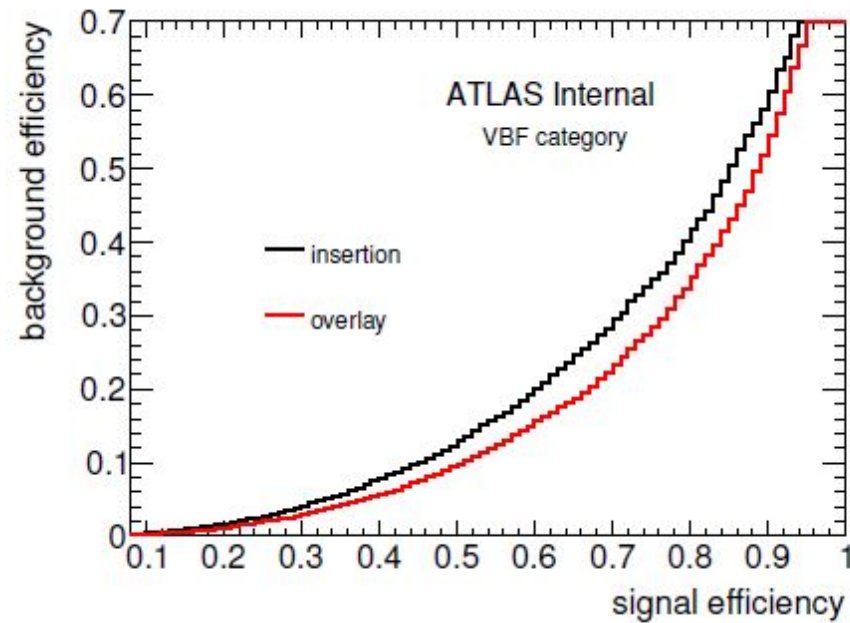
- bias MET calculation
- cause migration of 0-HS-jet and 1-HS-jet events into the VBF category
- bg contamination :
 - sub-lead pile-up jet(72%)
 - lead pile-up jet(42%)

insertion



- pile-up jets are inserted into events
- 2.4 jet per event for $u=140$, $p_T > 30\text{GeV}$

truth overlay



- no much difference

about to do

- no useful info
ATLAS-CONF-2014-061 (2014)
ATL-PHYS-PUB-2013-015 (2013)
- no useful info
- so still have no idea

```
//// Pileuprand uncertainty  
double JET_ggF_Pileuprand[12] = {0.02, 0.06, 0.02, 0.06, 0.06, -1.55, -0.84, -0.14, 0, 0, 0, -2.29};  
double JET_VBF_Pileuprand[12] = {0.03, 0.03, 0.03, 0.03, 0.03, -0.12, 0.04, -0.84, 0, 0, 0, -2.6};  
double JET_ttH_Pileuprand[12] = {0.07, 0.04, 0.07, 0.04, 0.04, -0.02, 0, 0.04, 0.01, 0.38, 0, -0.37};  
double JET_VH_Pileuprand[12] = {0, -0.05, 0, -0.05, -0.05, -3.21, -2.47, 0.07, -0.05, 0.22, 0.46, -1.46};
```