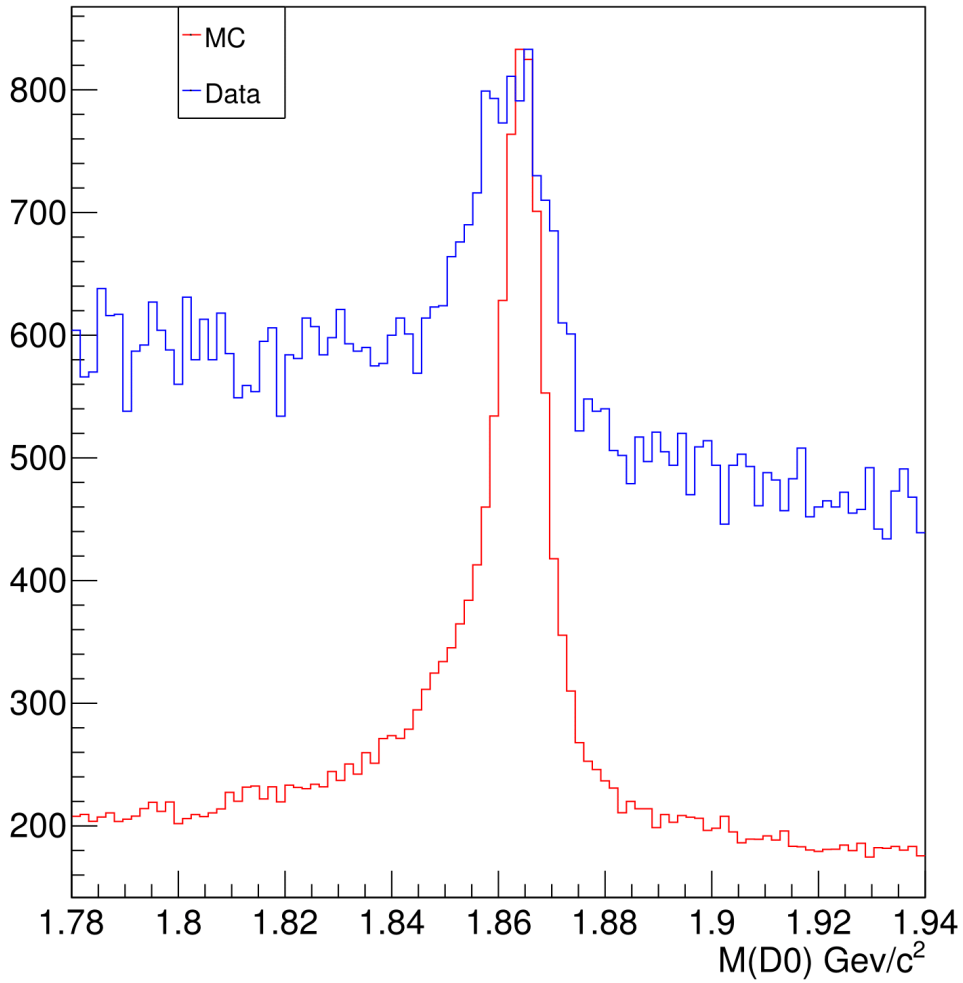
5 modes decay of D^0 is done.

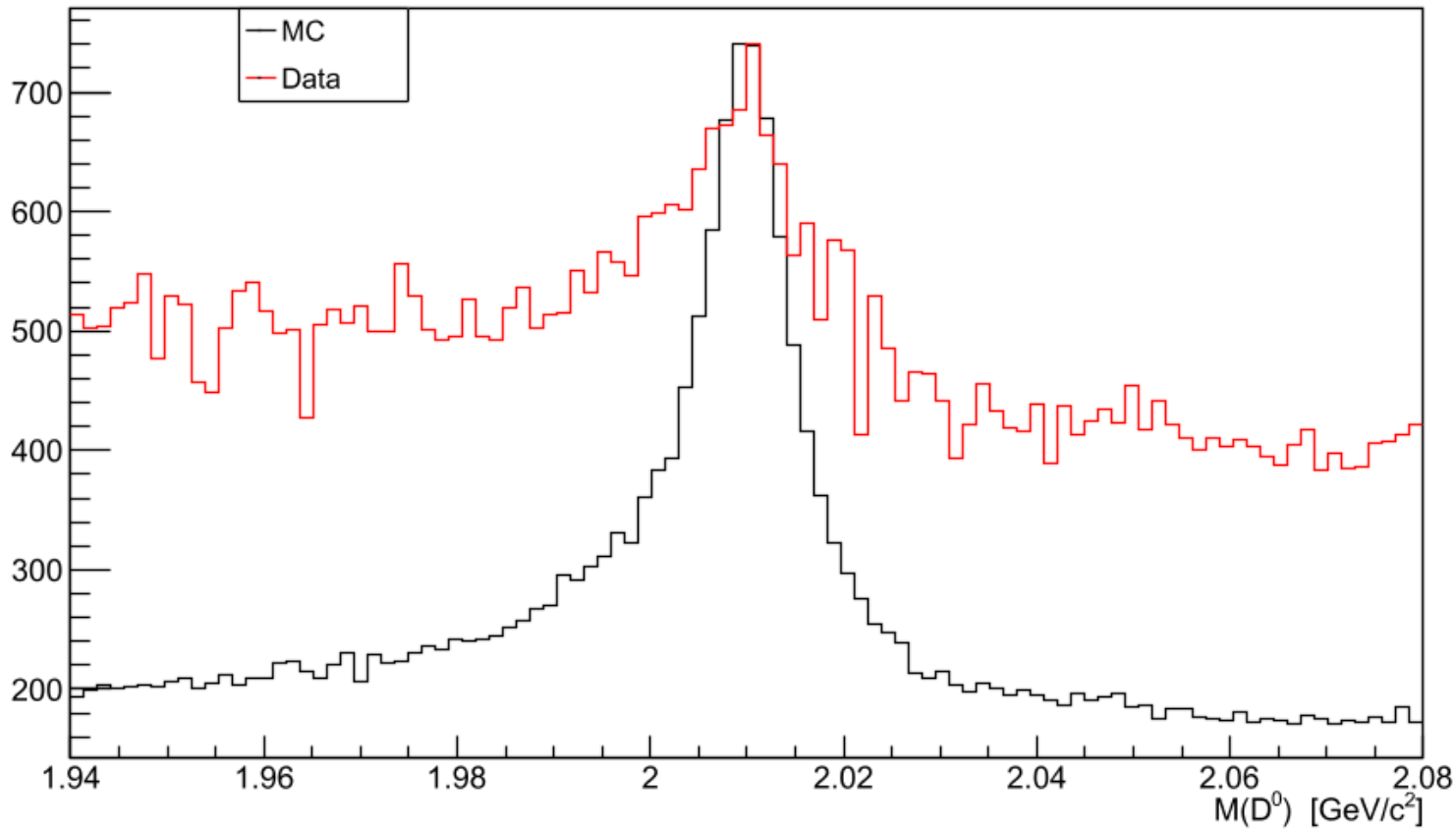
- cut (D*+ decay) 0.0 GeV $<$ Q $<$ 0.02 GeV
- $D^{*+} \rightarrow D^0\ \pi^+$
- cut (D0 decay) 1.78 GeV $<$ M $<$ 1.94 GeV
- $D^0 \rightarrow K^-\ \pi^+$
- $D^0 \rightarrow K^-\ \pi^+\ \pi^0$
- $D^0 \rightarrow K^-\ \pi^+\ \pi^+\ \pi^-$
- $D^0 \rightarrow K^-\ k^+$
- $D^0 \rightarrow K^0_s\ \pi^+\ \pi^-$

  For Data, Beam background is not taken into account.

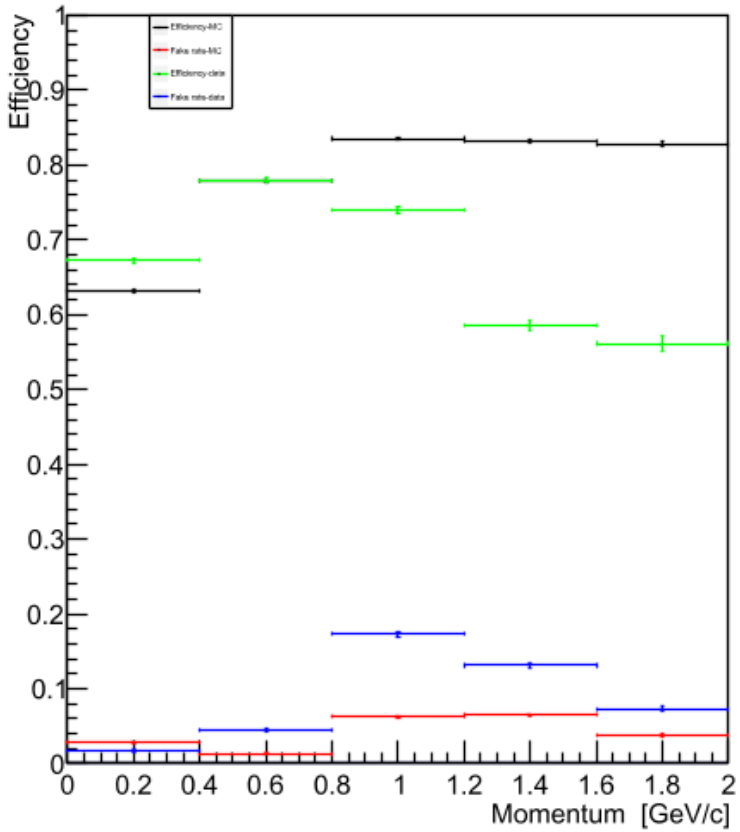
- The data are prod 5 data(release-02 – 00 – 01) .
- Analysis is done in release-02 – 01 – 00
- Efficiency = $\frac{\text{number of events passing PID cuts}}{\text{number of events no PID cuts}}$
- Fake rate of prarticle 1= $\frac{\text{number of events in which particle1 fakes particle 2}}{\text{number of events with all particle 2}}$

M {abs(dstQ)<0.08}

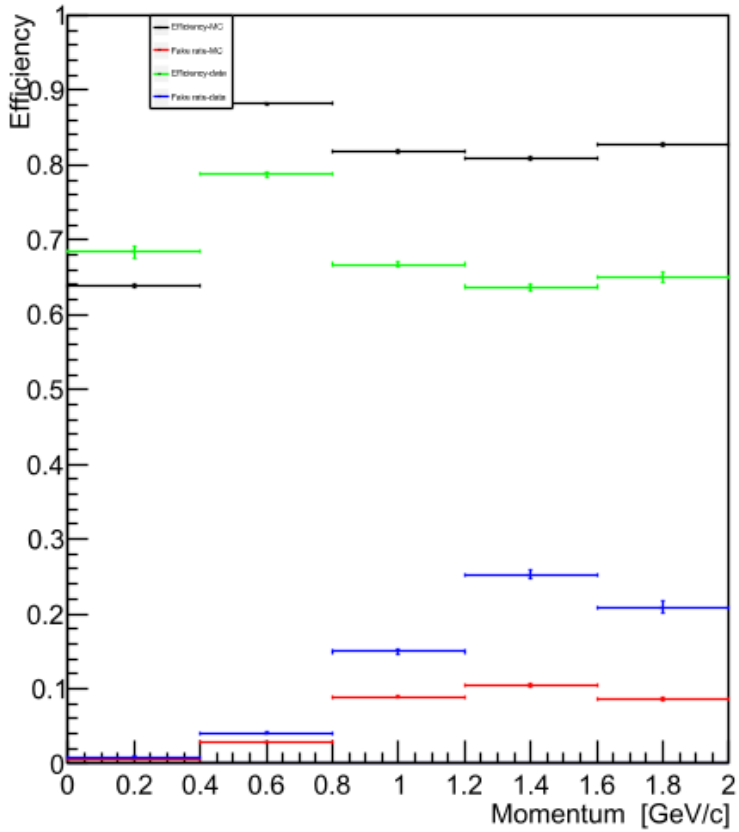



MC
Data
700
600
500
400
300
200
1.94
1.96
1.98
2
2.02
2.04
2.06
2.08
M(D⁰) [GeV/c²]

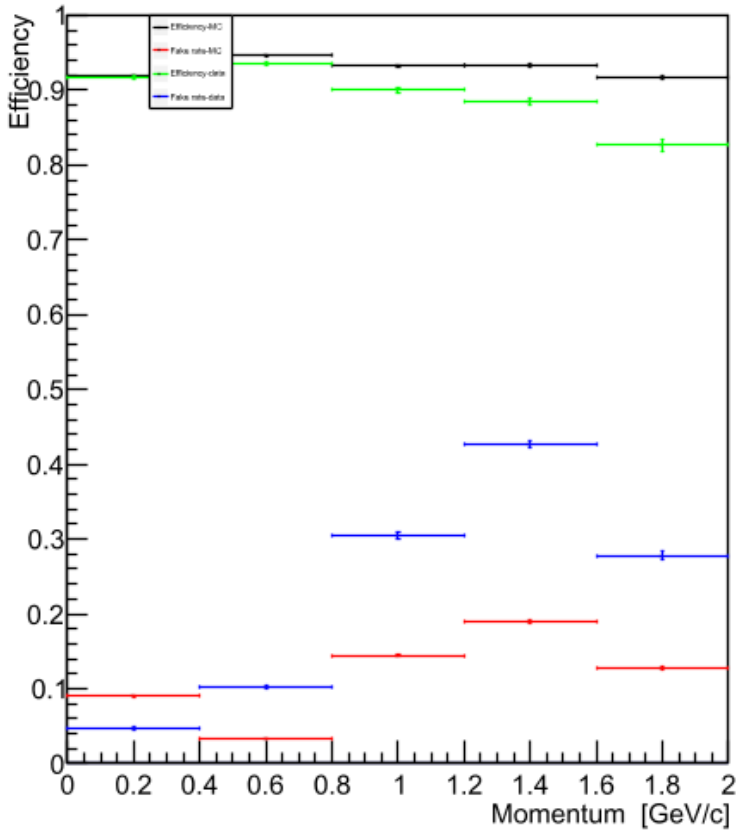
pionID(>0.5) efficiency vs p



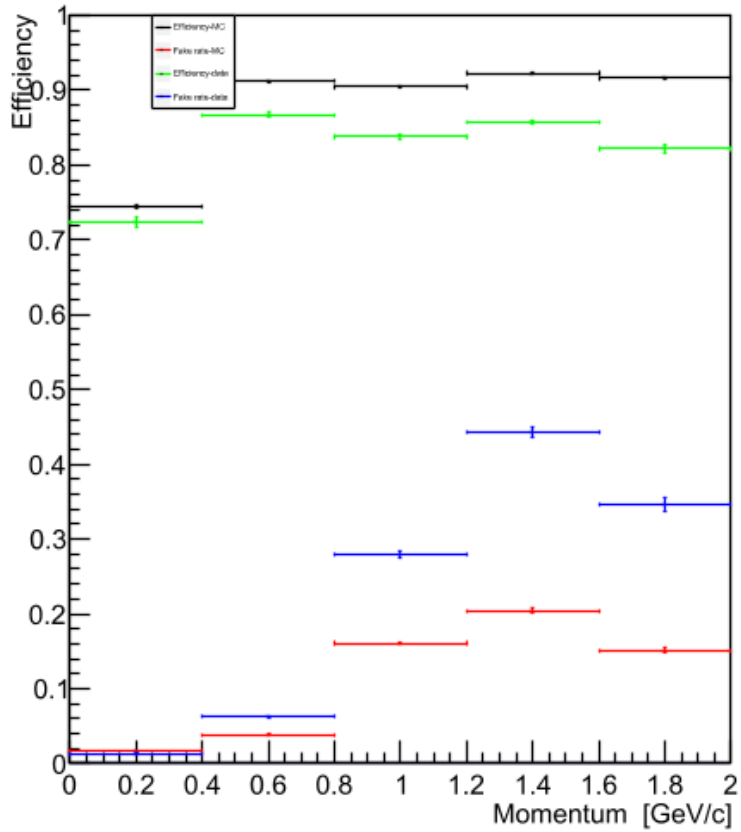
KaonID(>0.5) efficiency vs p



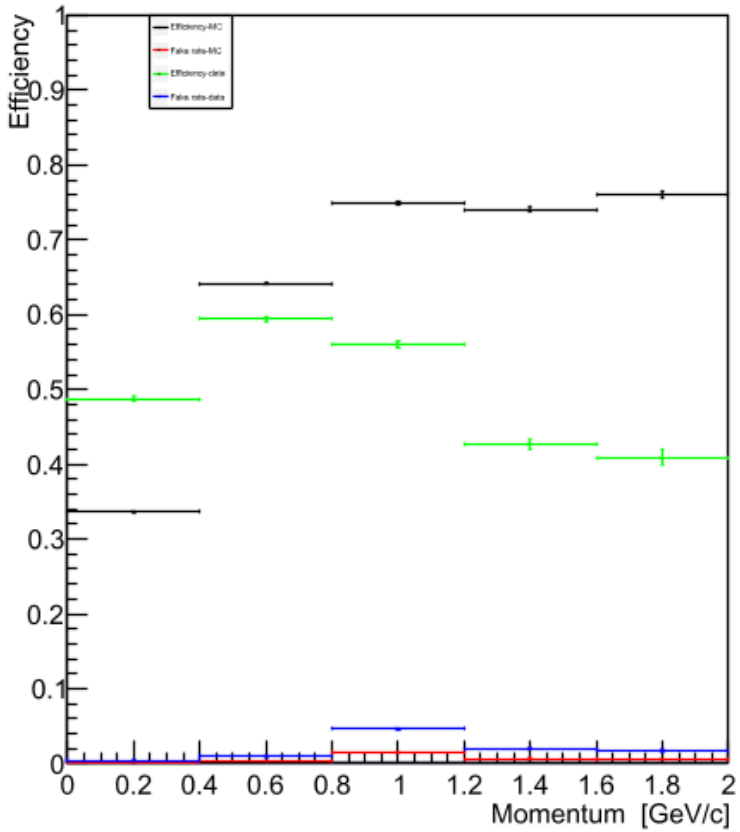
pionID(>0.2) efficiency vs p



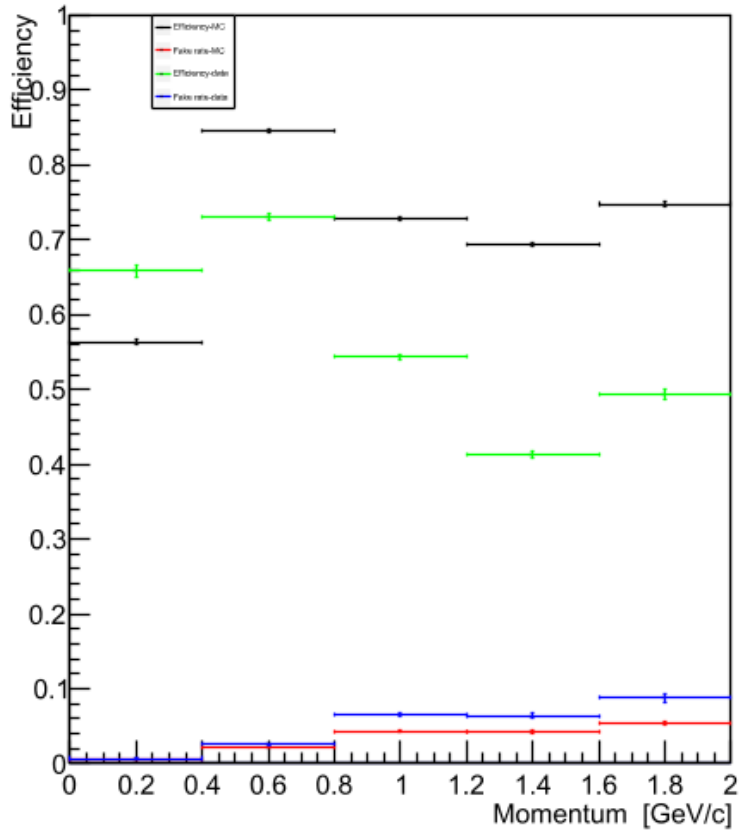
KaonID(>0.2) efficiency vs p



pionID(>0.8) efficiency vs p

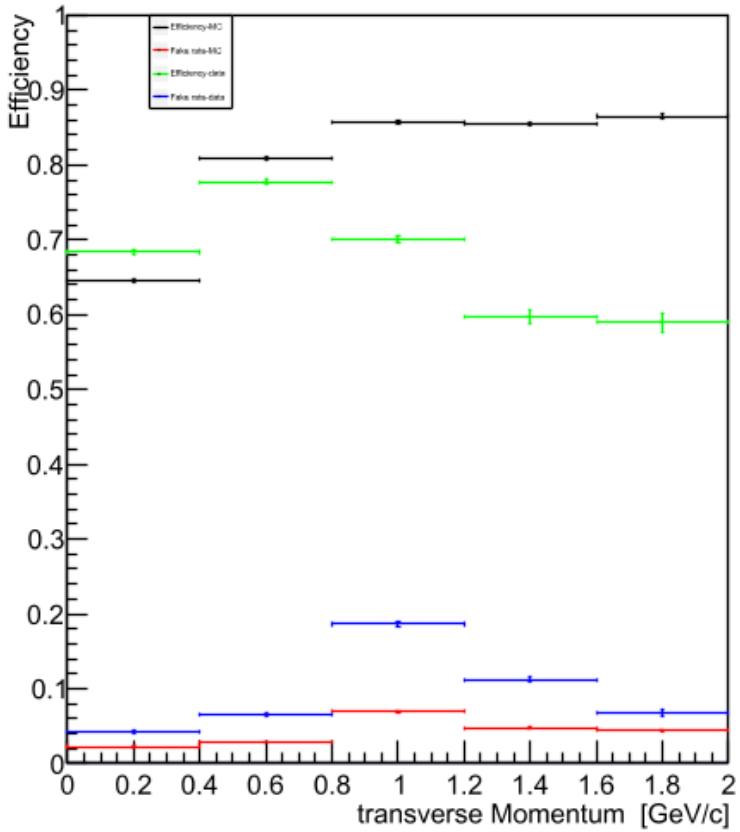


KaonID(>0.8) efficiency vs p

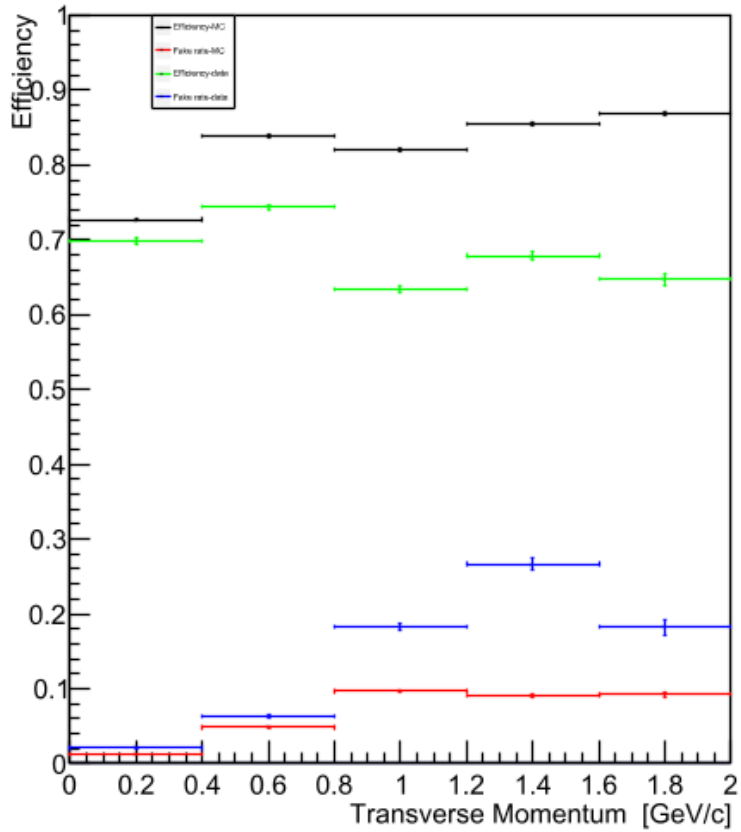


- If sharp PID cut is done , efficiency is lost but purity is gained
- If loose PID cut is done, efficiency is gained but purity is lost
- Choose PID cut according to analysis we wanna do.

pionID(>0.5) efficiency vs pt



KaonID(>0.5) efficiency vs pt



Next

Reconstruct,

$D^{*0} \rightarrow D^0\ \gamma$ or $D^{*0} \rightarrow D^0\ \pi^0$

$X(3872) \rightarrow D^{*0}\ \bar{D}^0$

$B \rightarrow X(3872)\ K$

This was previously done for 605 fb^{-1} *datasample*.