Looking for Parent W's

6TeV- WWnunu

- Processed data on KTjet, and multiple N2- VLC algorithms including R05, R07, R10, R12, and R15.
- We did this by setting our code to look for Parent W's +/-

→Looked to see how W decayed

→Performed sanity check to make sure parent is a W and both particles came from the same mother

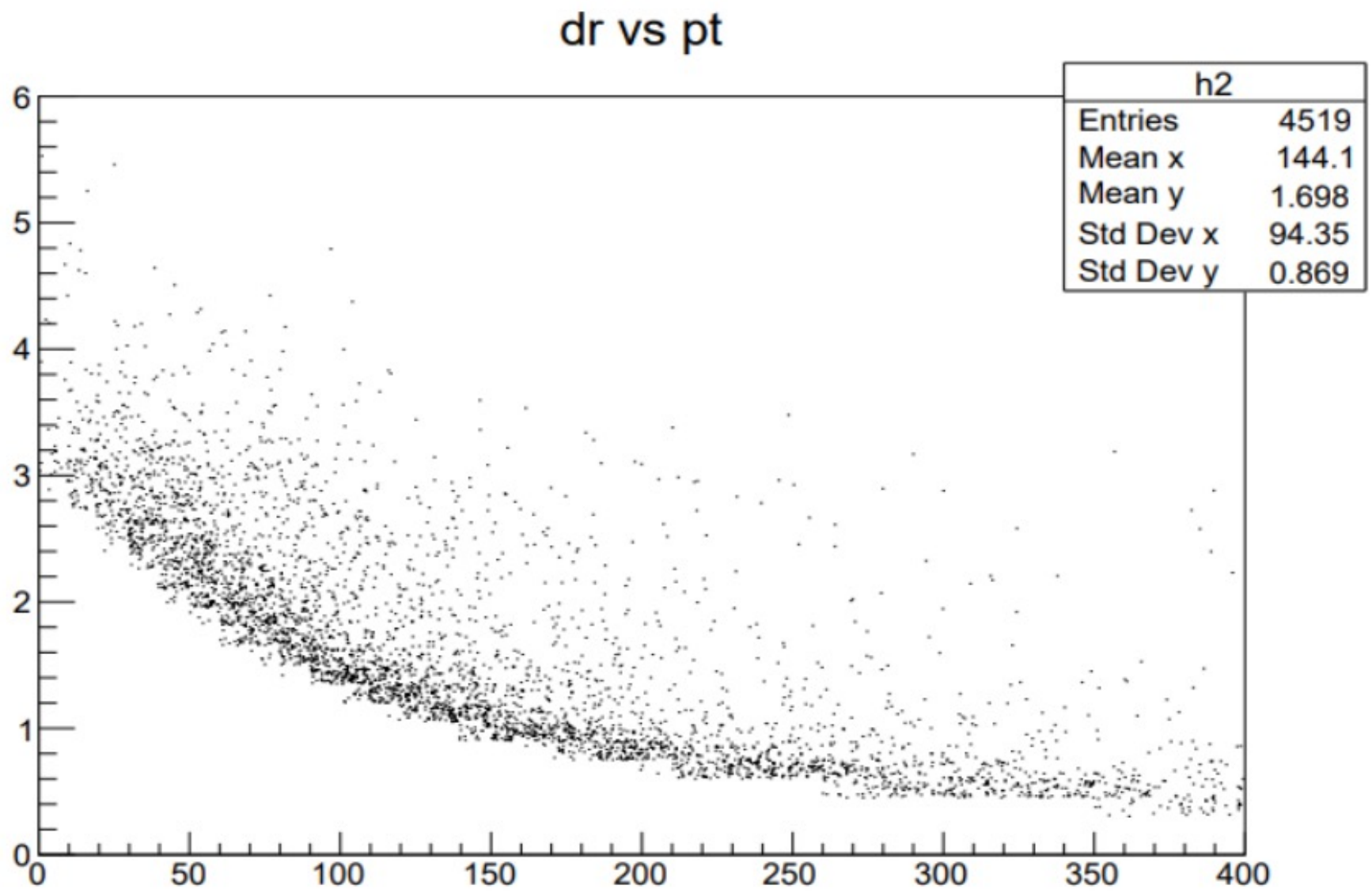
→Checked whether it was lepton-lepton, hadron-hadron, or lepton-hadron

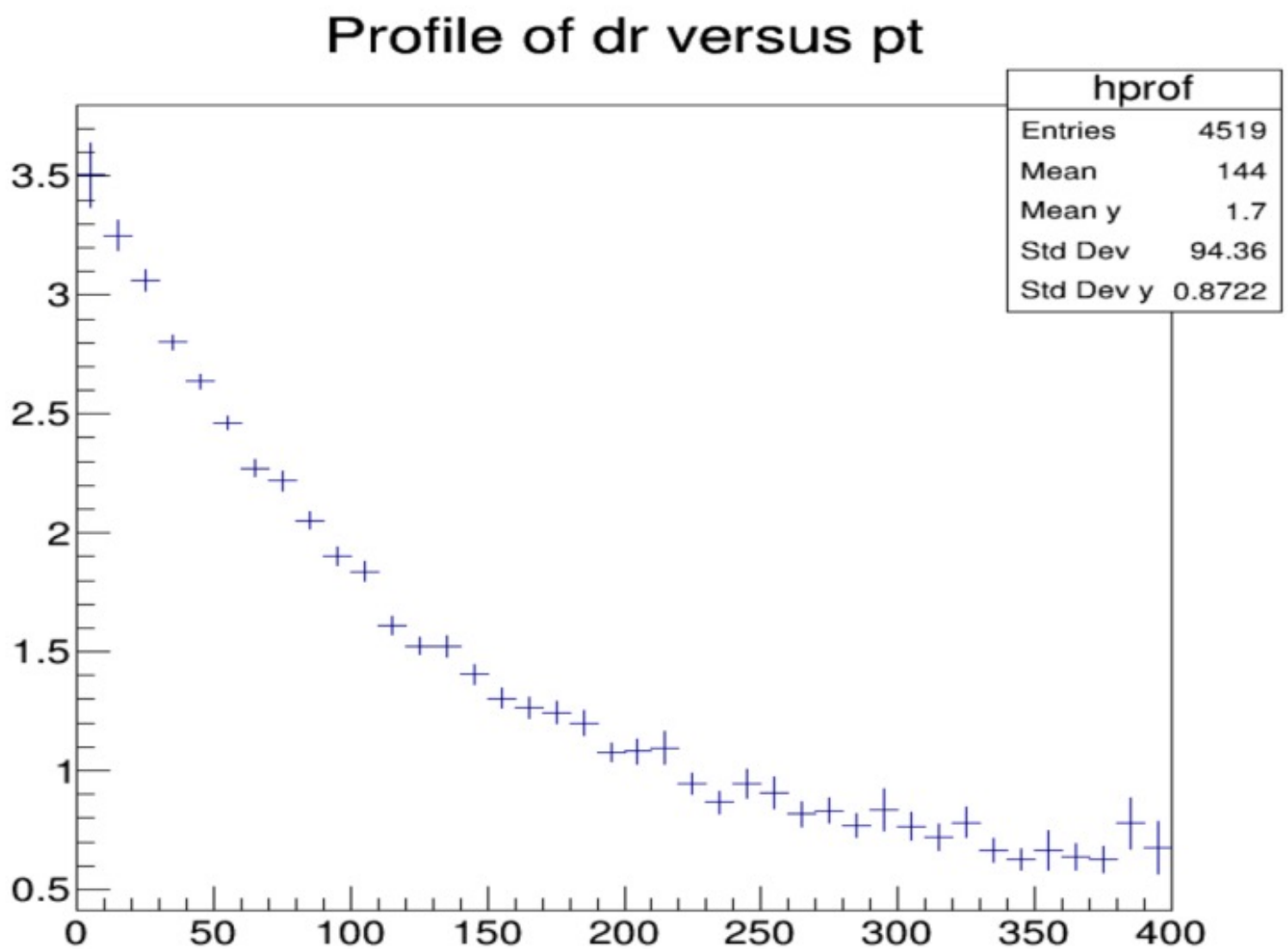
→Found Mass, PT, Eta, Phi for W1 and W2

→Looked for jets closest in Delta-R for each W

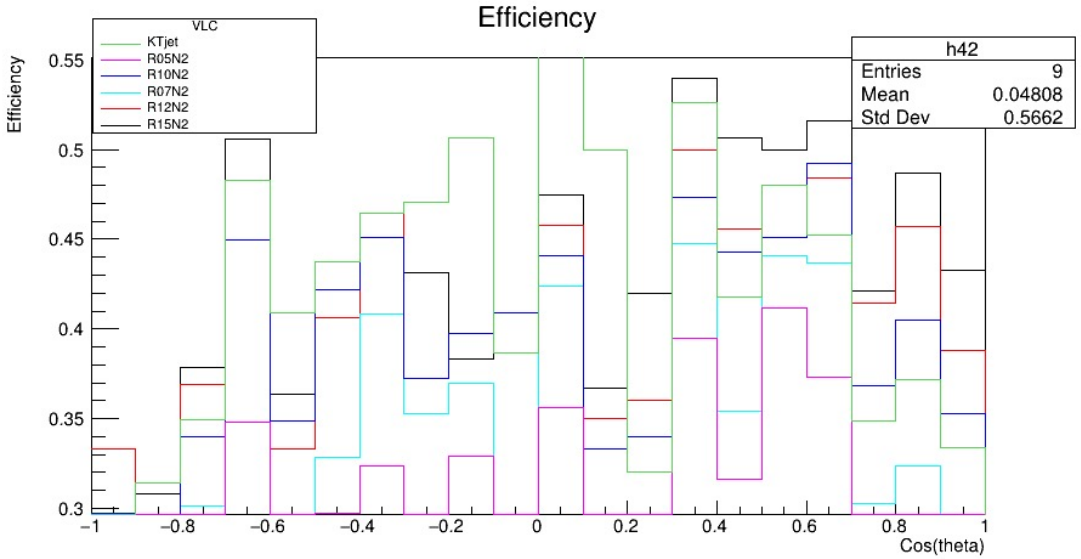
→Called it a match if Delta-eta<0.2, Delta-phi<0.2, and Delta-PT/PT<0.2

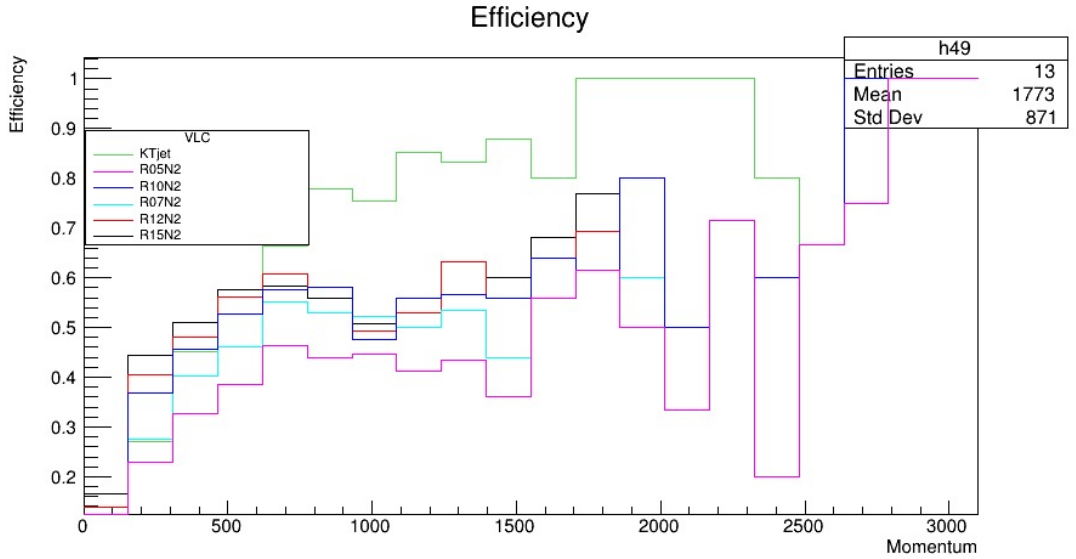
W within acceptance of detector ($|\eta|<2.0$)

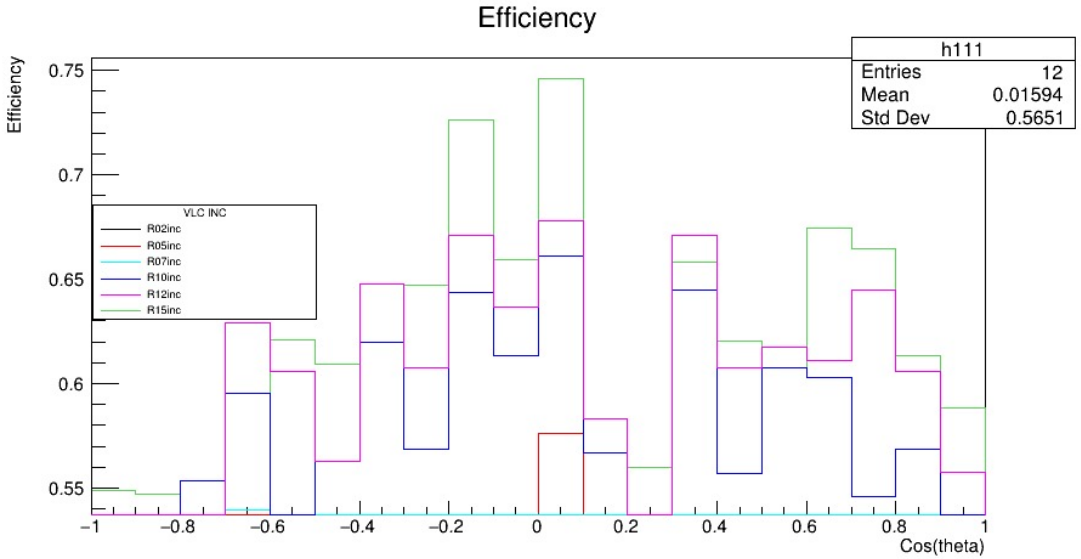

dr vs pt
h2
Entries 4519
Mean x 144.1
Mean y 1.698
Std Dev x 94.35
Std Dev y 0.869
0
1
2
3
4
5
6
0
50
100
150
200
250
300
350
400

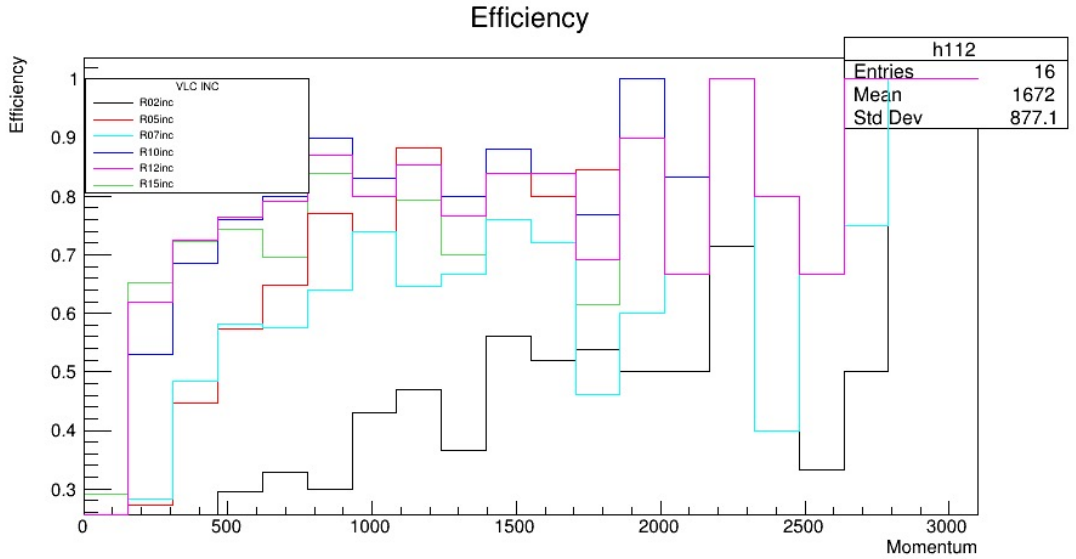

Profile of dr versus pt
hprof
Entries 4519
Mean 144
Mean y 1.7
Std Dev 94.36
Std Dev y 0.8722
3.5
3
2.5
2
1.5
1
0.5
0
50
100
150
200
250
300
350
400

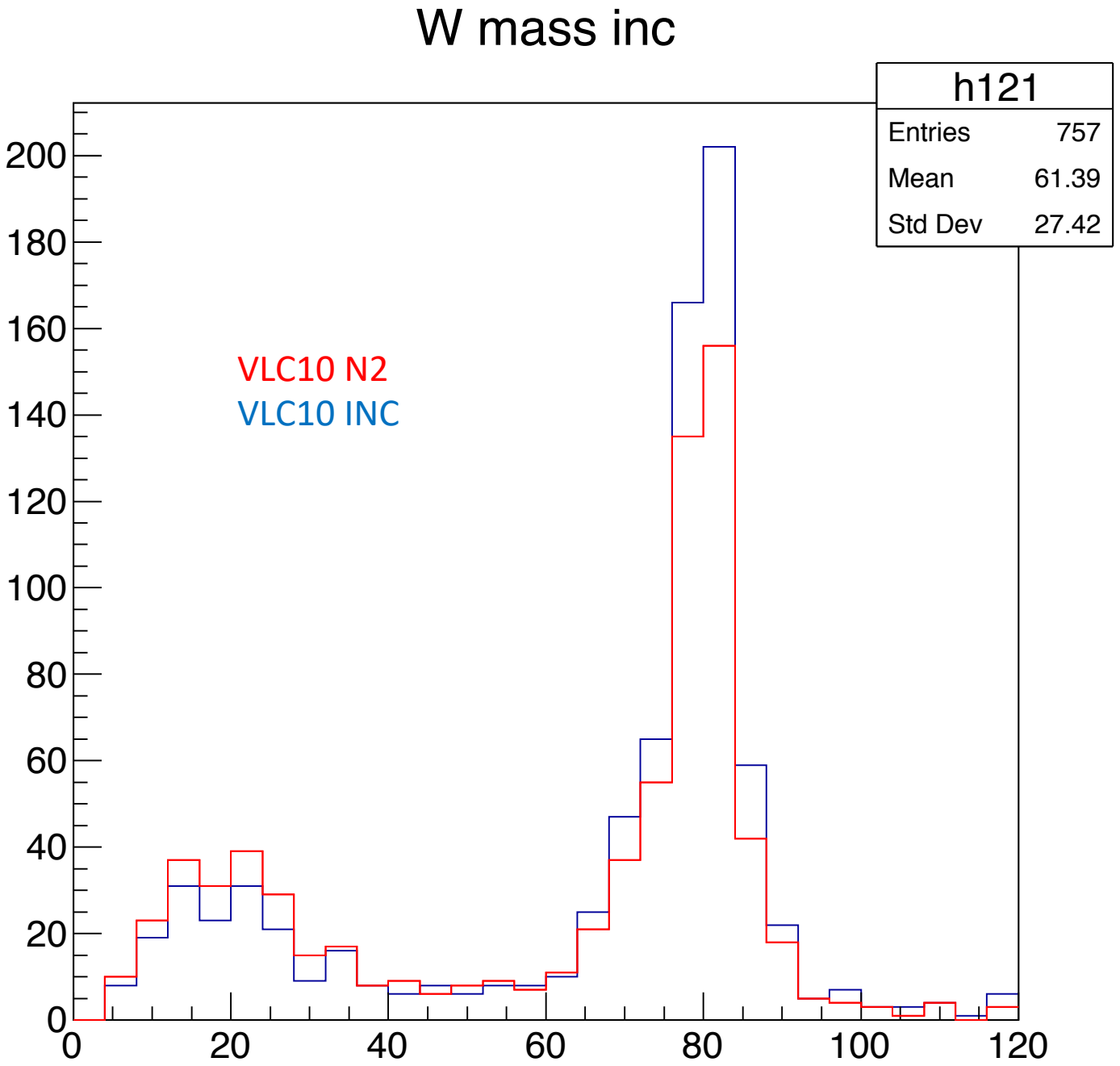
Single jet eff











Mass of matching jets
For R10 algorithm

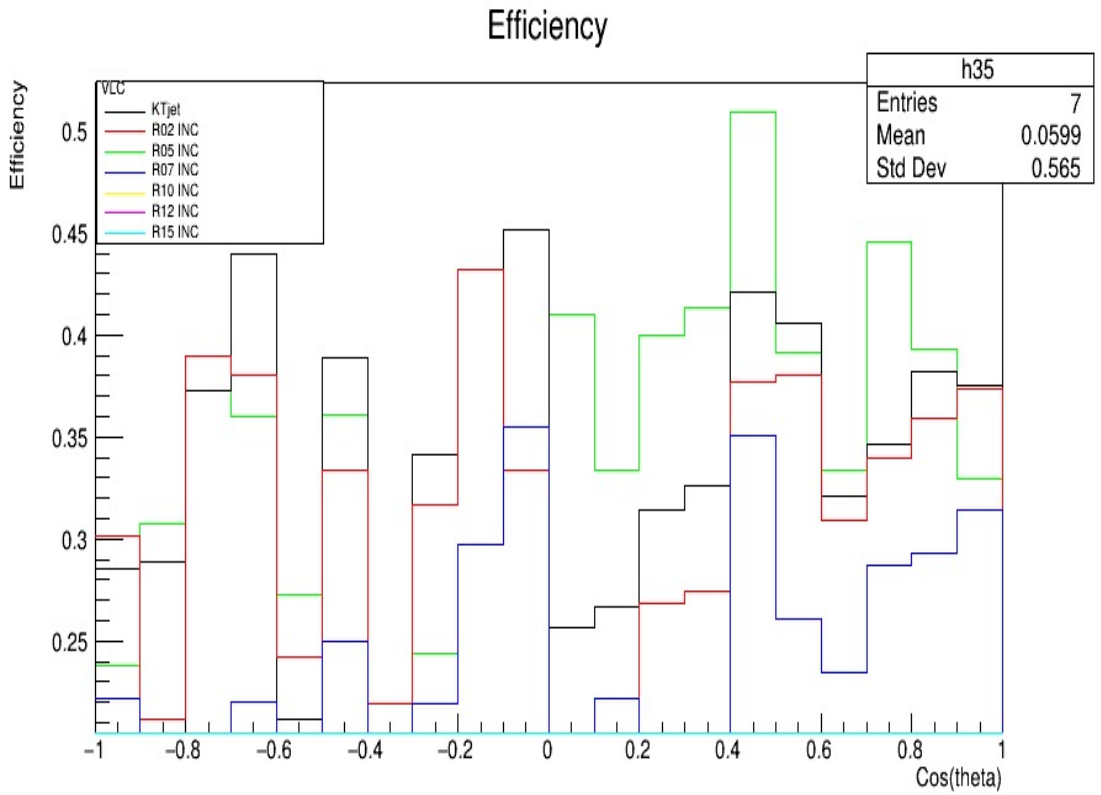
Di-Jet

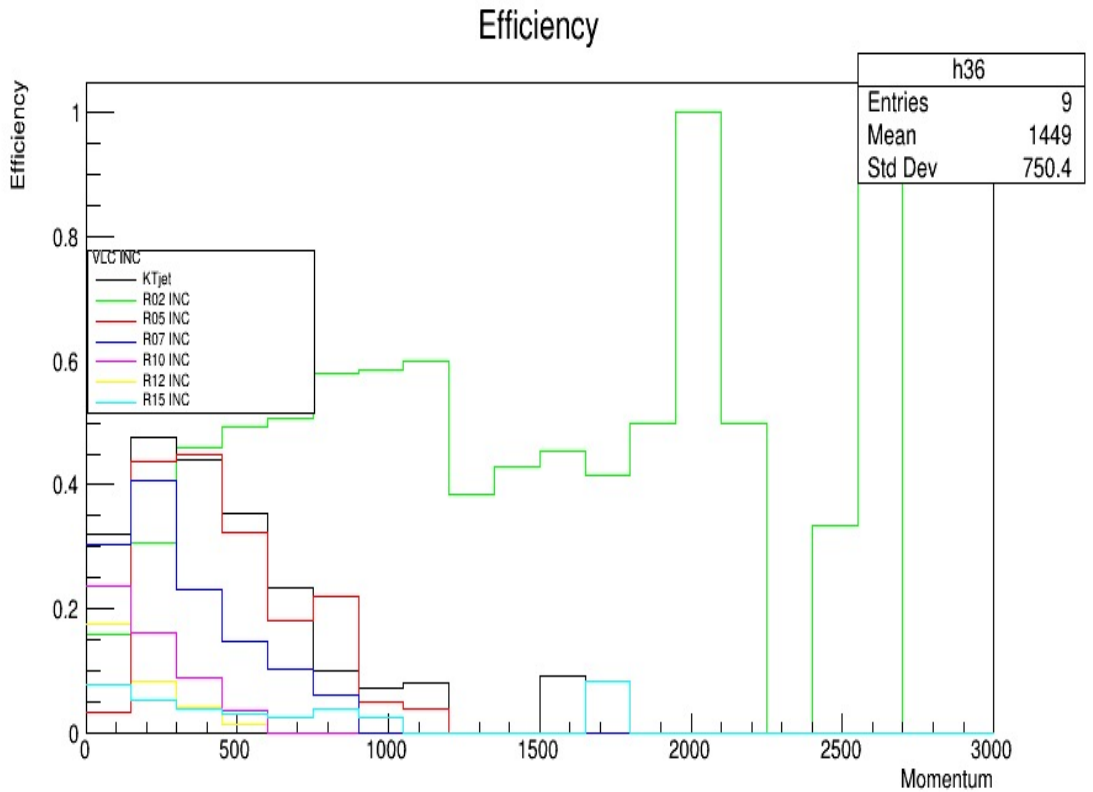
$\sqrt{s} = 6\,TeV - \mathrm{WWnunu}$

- Processed data on KTjet and VLC-inclusive R02, R05, R07, R10, R12, R15
  - Looked to see how W decayed
  - Checked whether it was lepton-lepton, hadron-hadron, or hadron-lepton
  - Filled J0, J1, J2, J3 with PT, Eta, Phi, Mass
  - JT(0)=J0 +J1, JT(1)= J0 +J2 etc. Until all variations were accounted for
  - Looked for bestmass = JT[i] -80.4 If |bestmass| < 20 GeV then a candidate
  - If dphi, deta, and dpt /Pt were < 0.2 then W1 found

Both quarks from the W within acceptance of the detector $|\eta|<2.0$

Dijet eff


Efficiency
h35
Entries 7
Mean 0.0599
Std Dev 0.565
VLC
KTjet
R02 INC
R05 INC
R07 INC
R10 INC
R12 INC
R15 INC
Efficiency
Cos(theta)


Efficiency
h36
Entries 9
Mean 1449
Std Dev 750.4
VLC INC
KTjet
R02 INC
R05 INC
R07 INC
R10 INC
R12 INC
R15 INC
Efficiency
Momentum