

## **ctau 1cm**

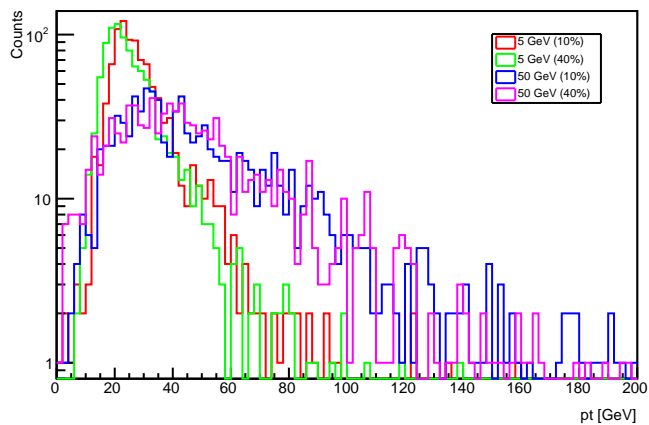
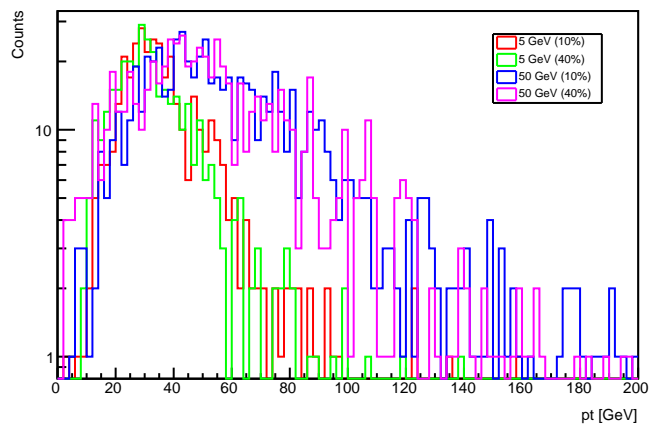
**nevents 5 GeV (10%): 1000(c1:373,c2:4,c3:2,c4:3)**

**nevents 5 GeV (40%): 1000(c1:353,c2:1,c3:5,c4:57)**

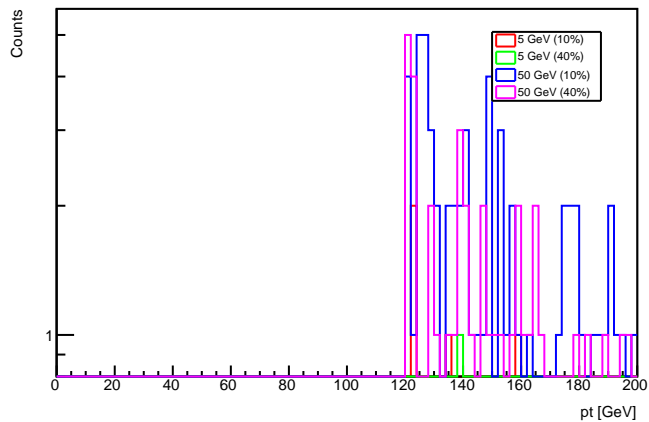
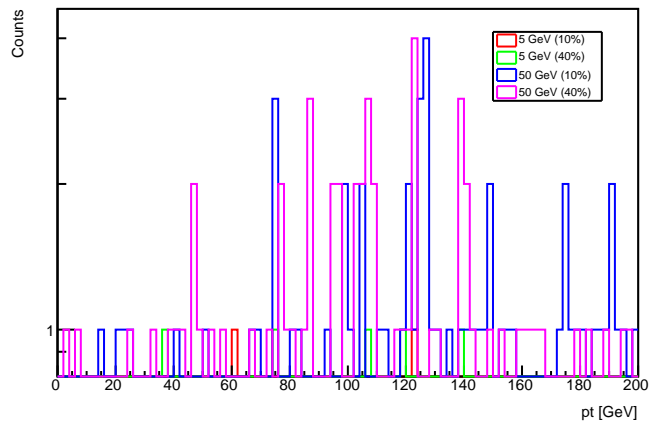
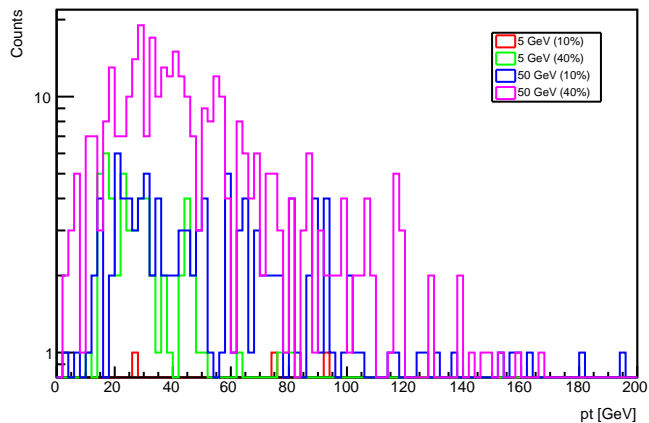
**nevents 50 GeV (10%): 1000(c1:709,c2:74,c3:73,c4:130)**

**nevents 50 GeV (40%): 1000(c1:709,c2:44,c3:67,c4:355)**

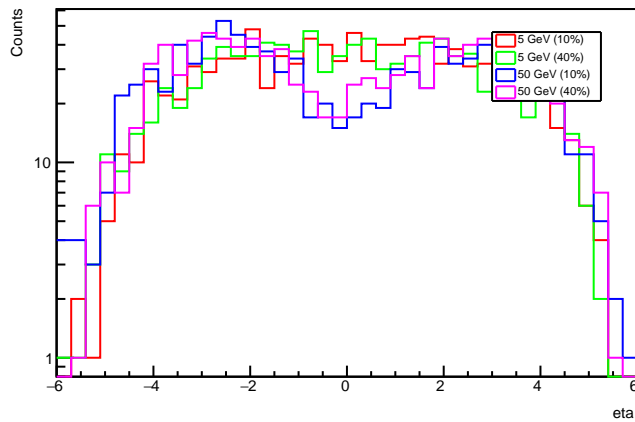
gen leading MET: no cuts

gen leading MET:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

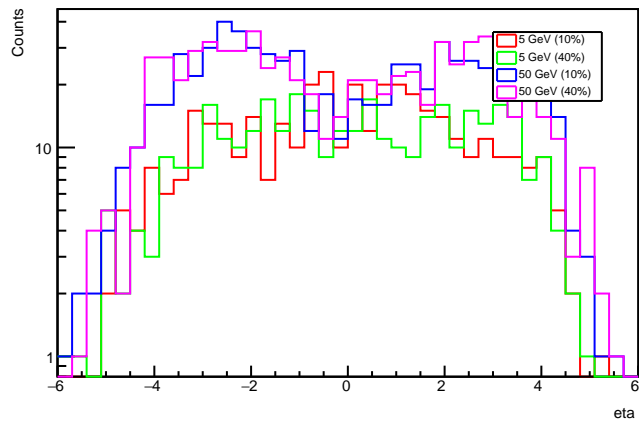
gen leading MET: MET &gt; 120 GeV

gen leading MET:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_{\text{T}} > 30$  GeVgen leading MET: at least 2 mu w/  $p_{\text{T}} \geq 2$  GeV and  $|\eta| < 2.5$ 

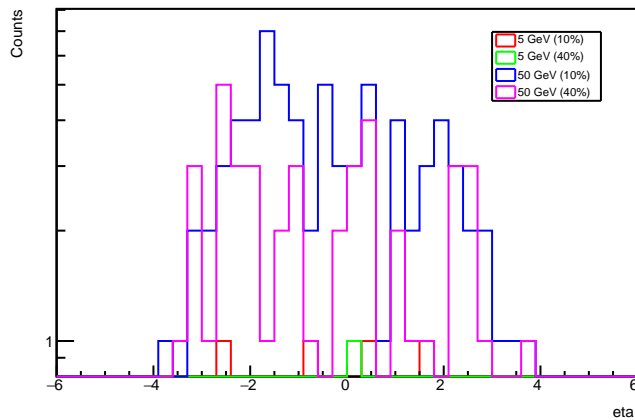
gen leading Met eta: no cuts



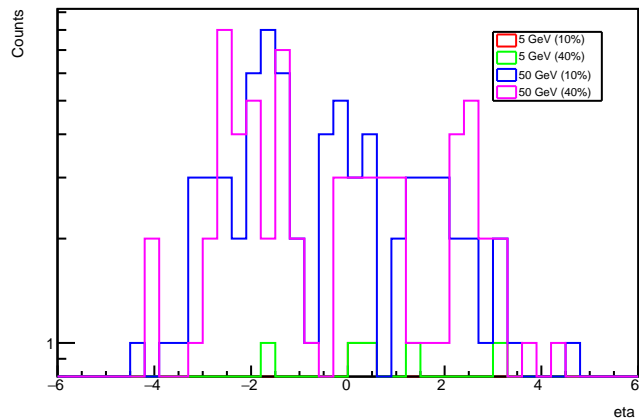
gen leading Met eta: n\_jet &gt;=1, j1pt &gt; 30 GeV



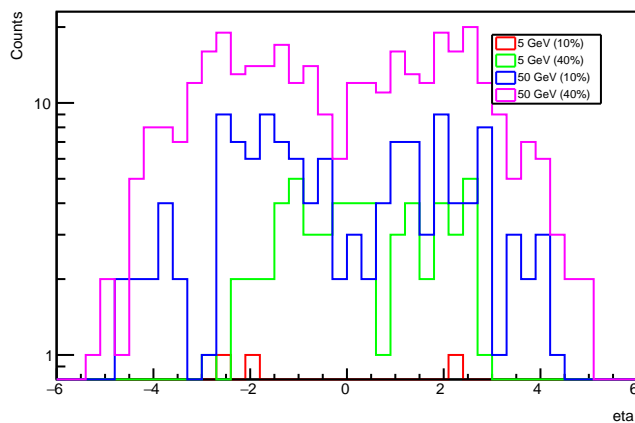
gen leading Met eta: MET &gt; 120 GeV



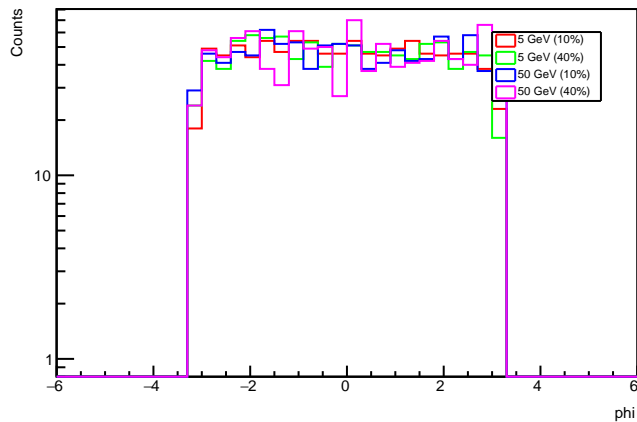
gen leading Met eta: j1pt &gt;120, at most 2 jets w/ pt &gt;30 GeV



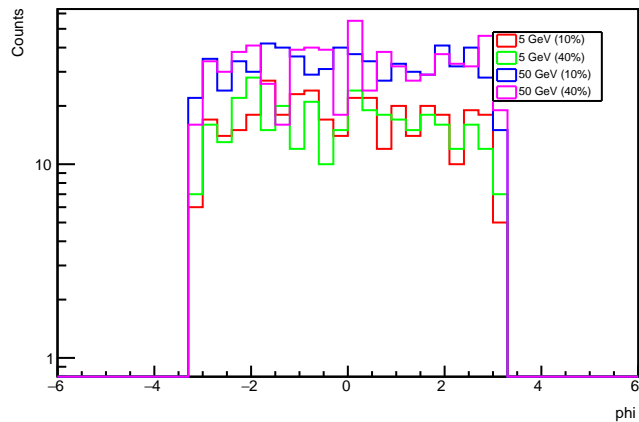
gen leading Met eta: at least 2 mu w/ pt &gt; 2 GeV and eta &lt; 2.5



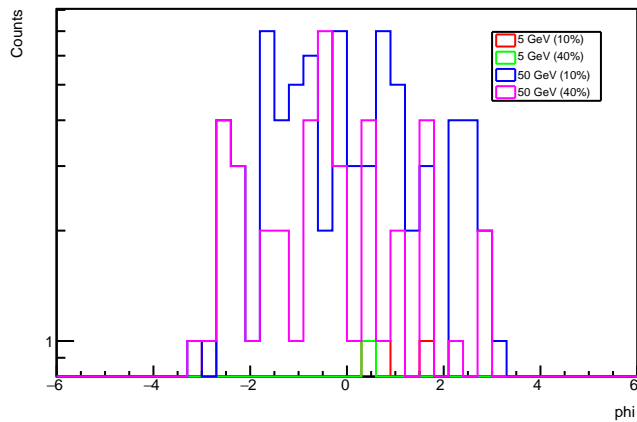
gen leading Met phi: no cuts



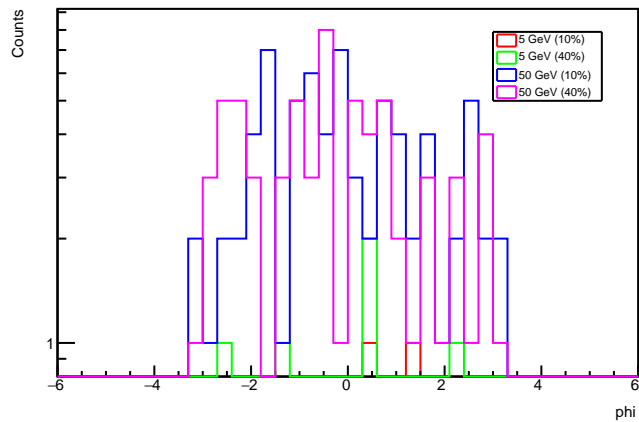
gen leading Met phi: n\_jet &gt;= 1, j1pt &gt; 30 GeV



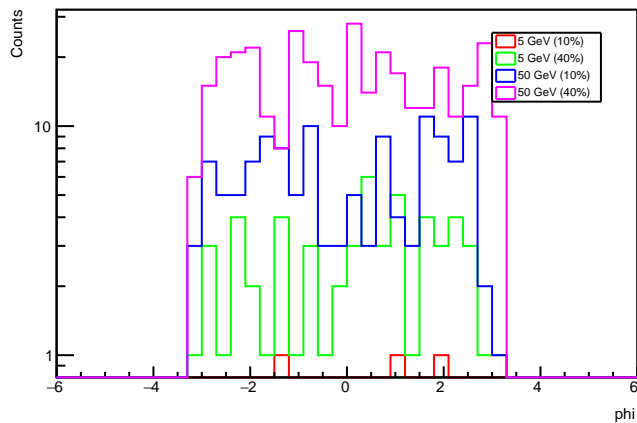
gen leading Met phi: MET &gt; 120 GeV



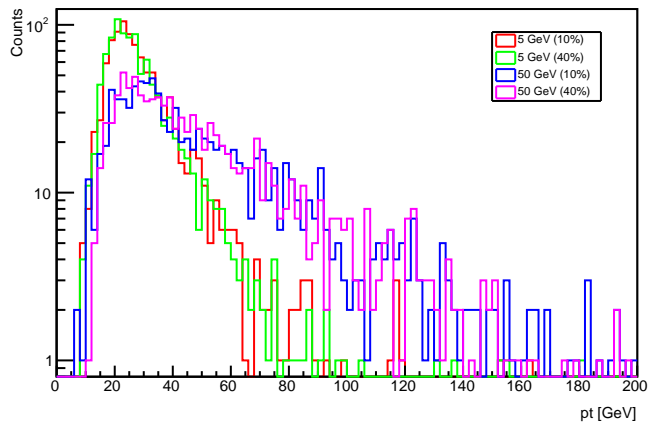
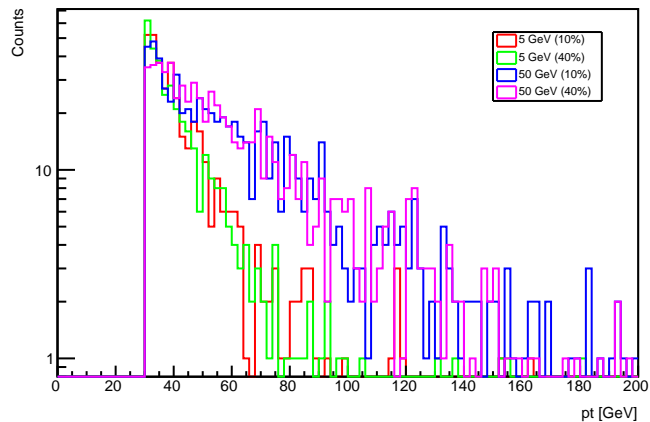
gen leading Met phi: j1pt &gt; 120, at most 2 jets w/ pt &gt; 30 GeV



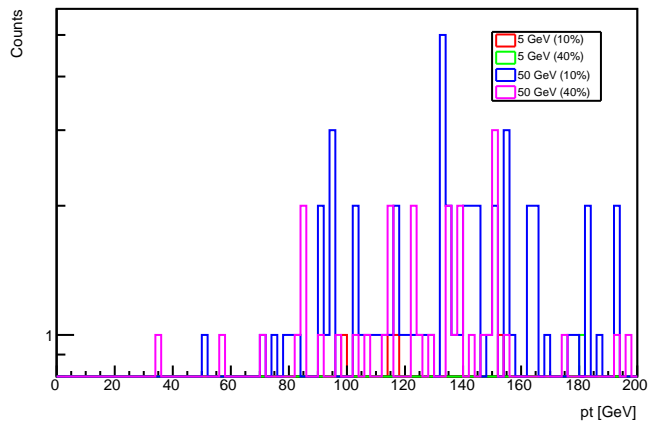
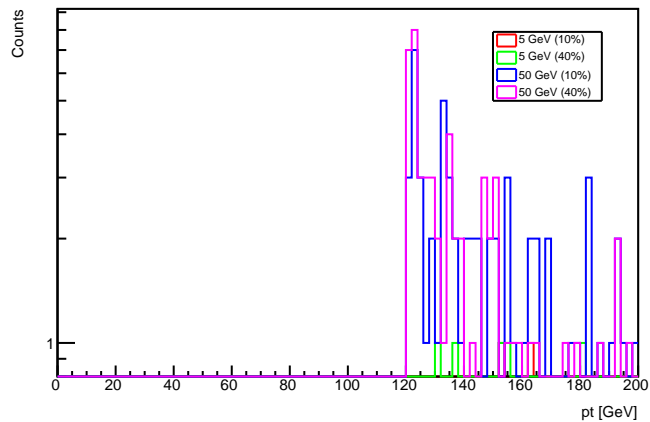
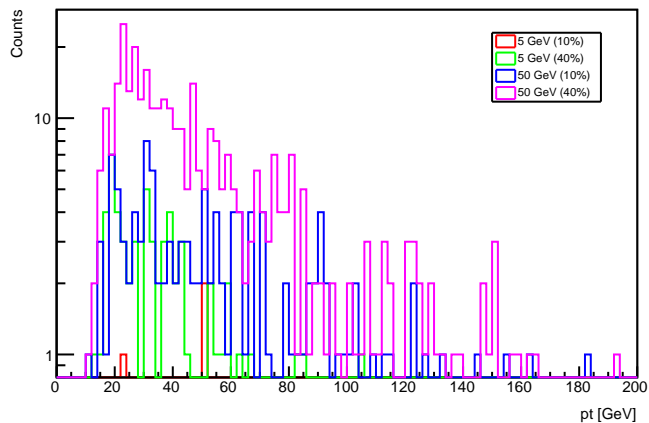
gen leading Met phi: at least 2 mu w/ pt &gt; 2 GeV and eta &lt; 2.5



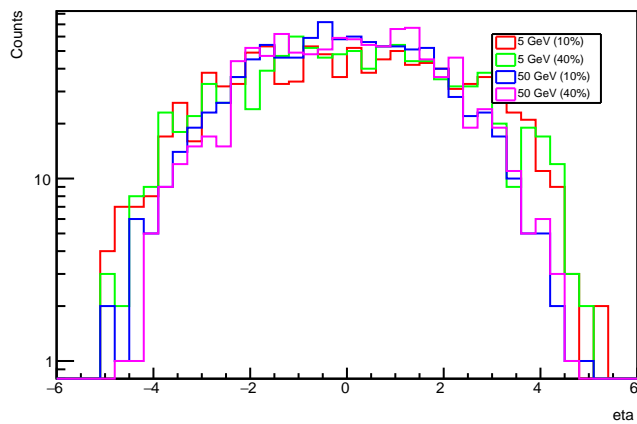
gen leading Jet pt: no cuts

gen leading Jet pt:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

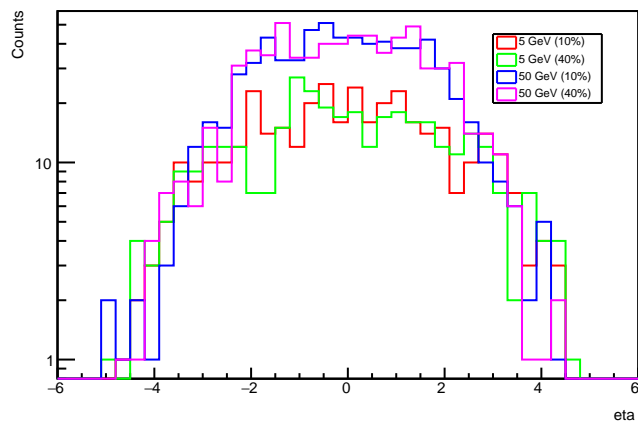
gen leading Jet pt: MET &gt; 120 GeV

gen leading Jet pt:  $j_{1\text{pt}} > 120$ , at most 2 jets w/ pt > 30 GeVgen leading Jet pt: at least 2 mu w/ pt ? 2 GeV and  $\eta < 2.5$ 

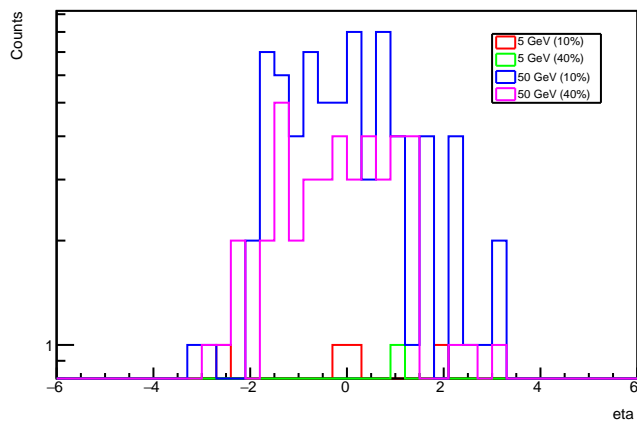
gen leading Jet eta: no cuts



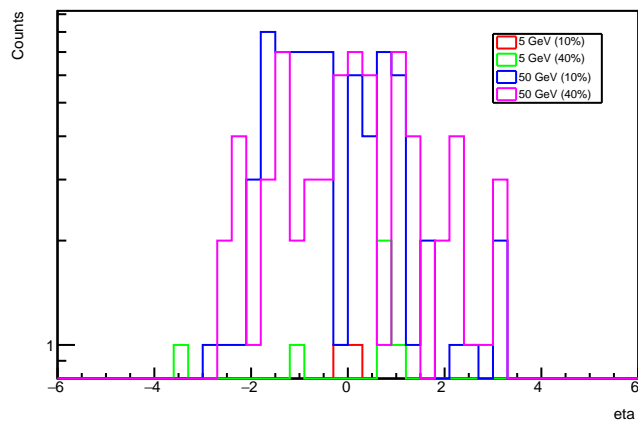
gen leading Jet eta:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV



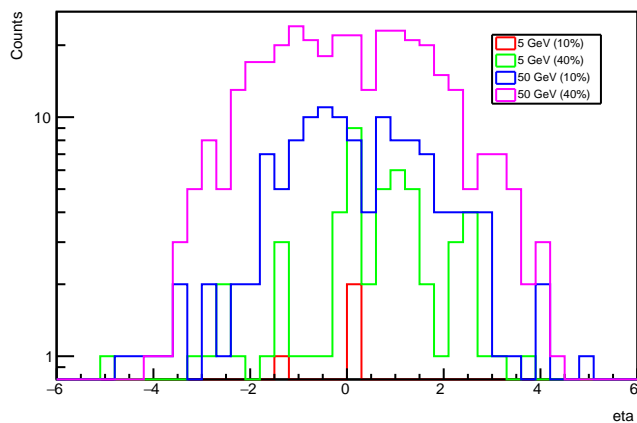
gen leading Jet eta: MET > 120 GeV



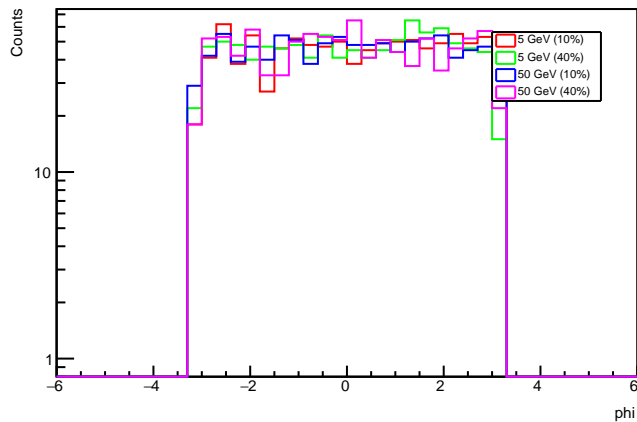
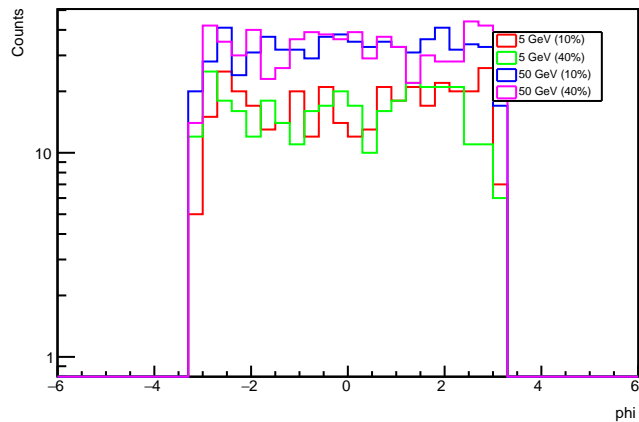
gen leading Jet eta:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeV



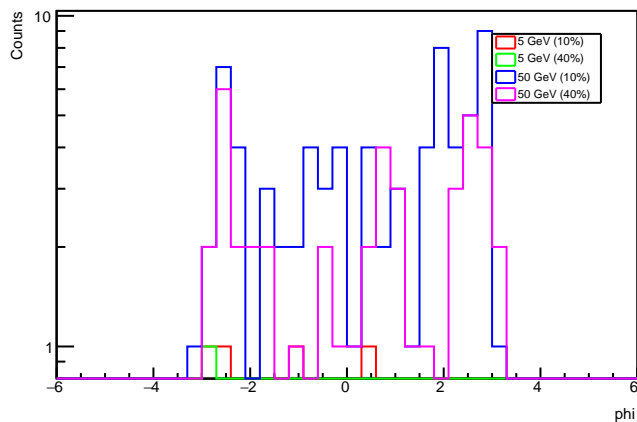
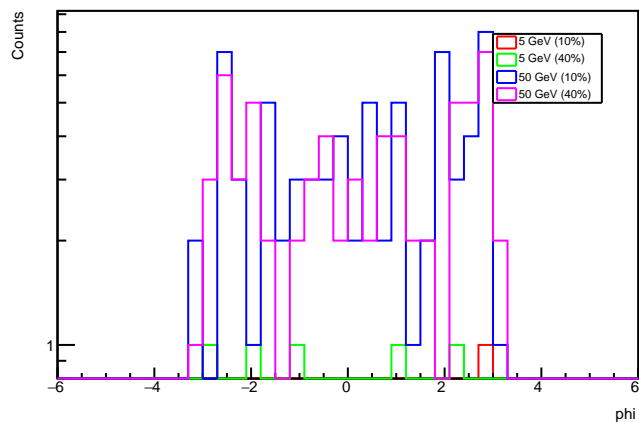
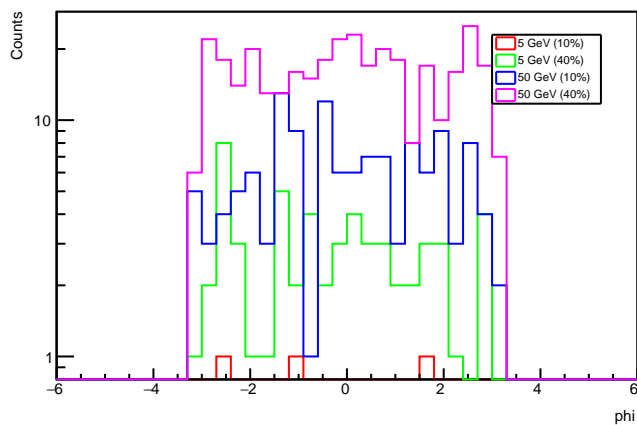
gen leading Jet eta: at least 2 mu w/  $p_t \geq 2$  GeV and  $\eta < 2.5$



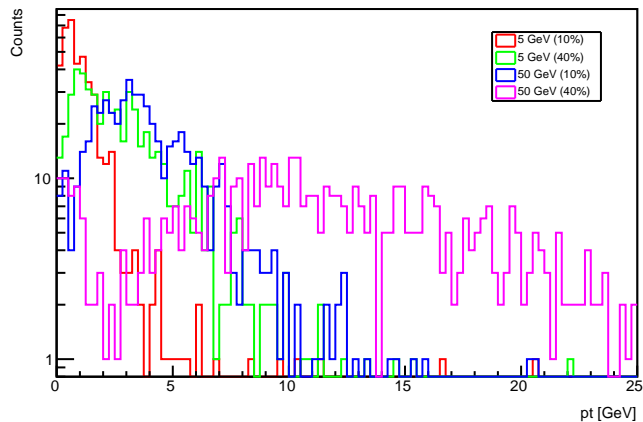
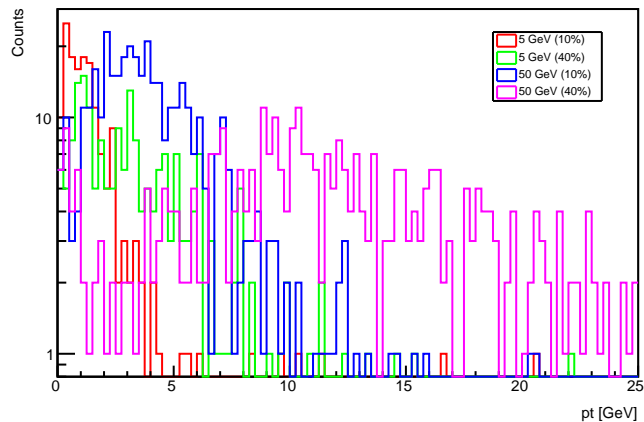
gen leading Jet phi: no cuts

gen leading Jet phi:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

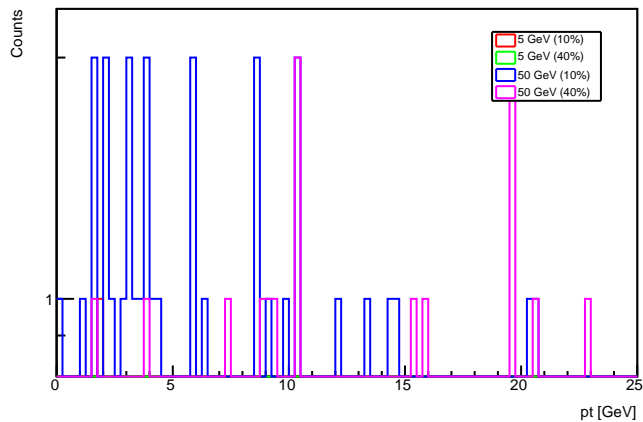
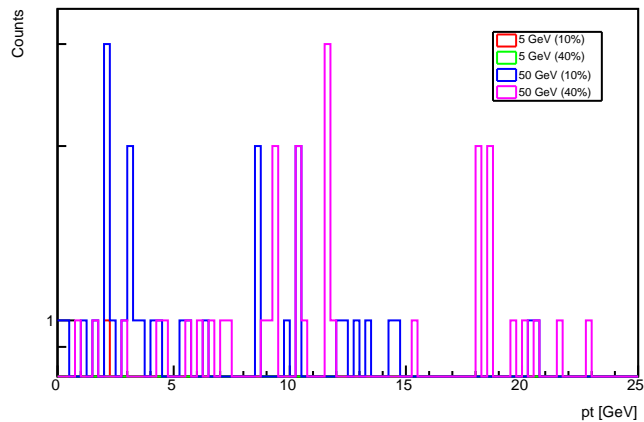
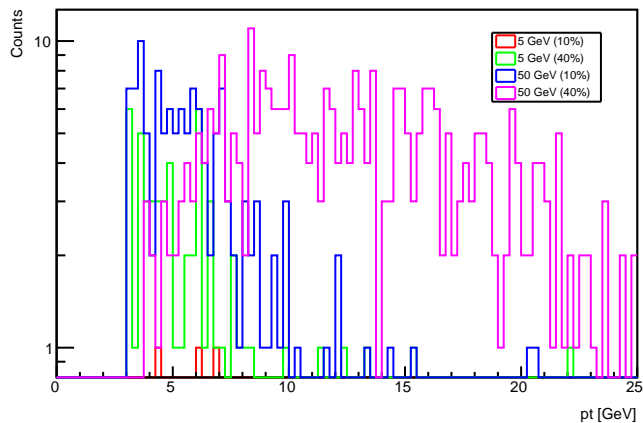
gen leading Jet phi: MET &gt; 120 GeV

gen leading Jet phi:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_T > 30$  GeVgen leading Jet phi: at least 2 mu w/  $p_T \geq 2$  GeV and  $\eta < 2.5$ 

gen leading Mu pt: no cuts

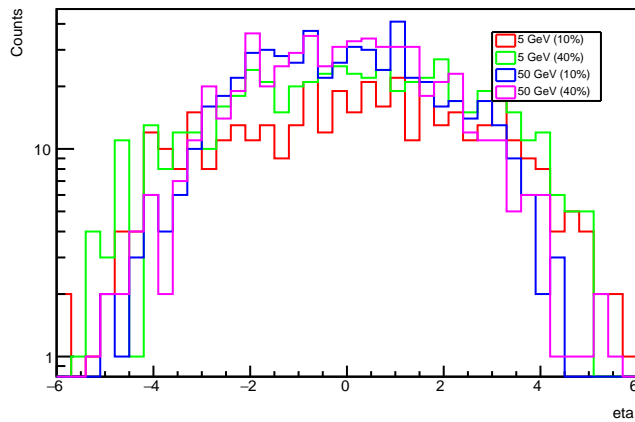
gen leading Mu pt:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

gen leading Mu pt: MET &gt; 120 GeV

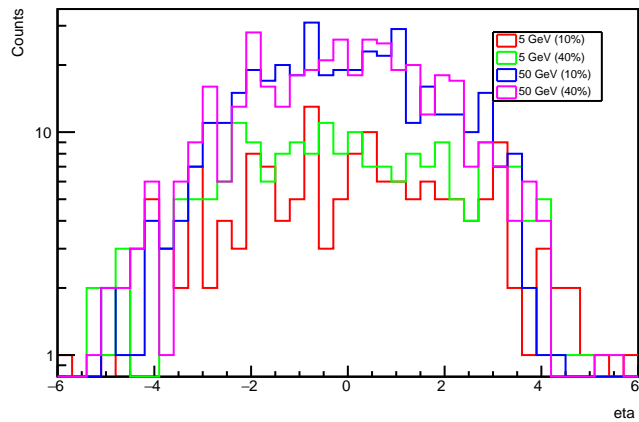
gen leading Mu pt:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_{\text{T}} > 30$  GeVgen leading Mu pt: at least 2 mu w/  $p_{\text{T}} \geq 2$  GeV and  $\eta < 2.5$ 



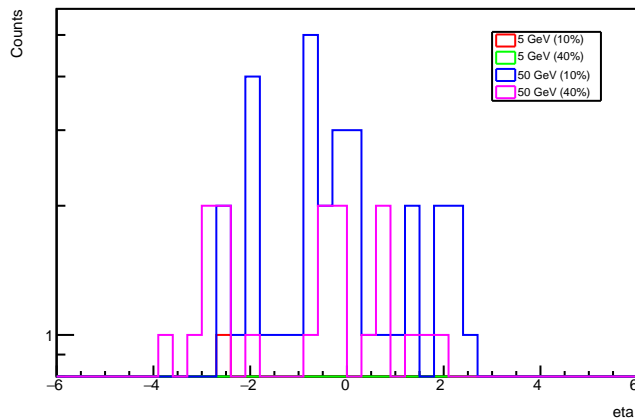
gen leading Mu eta: no cuts



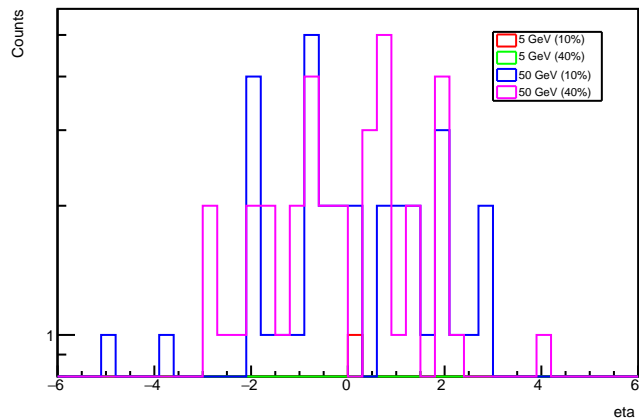
gen leading Mu eta: n\_jet &gt;=1, j1pt &gt; 30 GeV



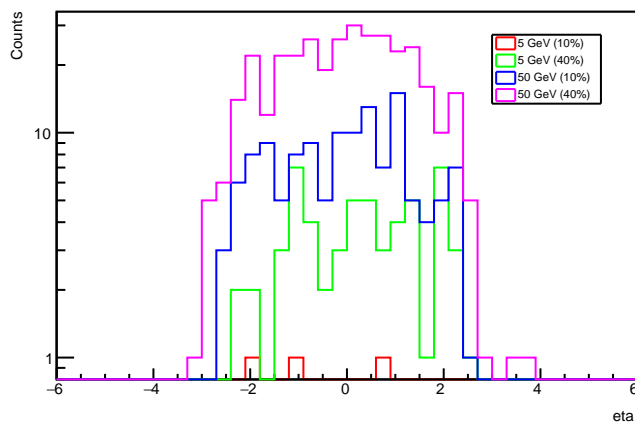
gen leading Mu eta: MET &gt; 120 GeV



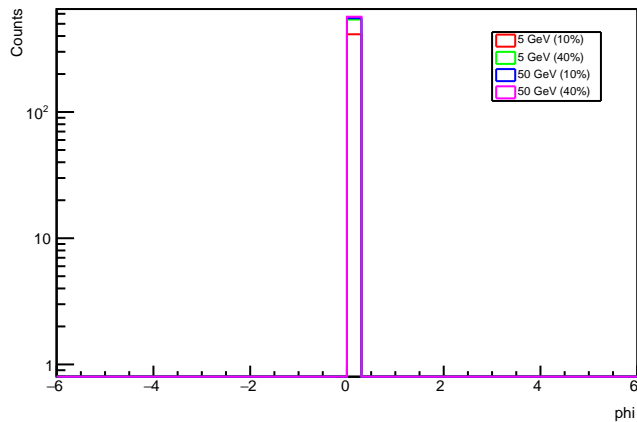
gen leading Mu eta: j1pt &gt;120, at most 2 jets w/ pt &gt;30 GeV



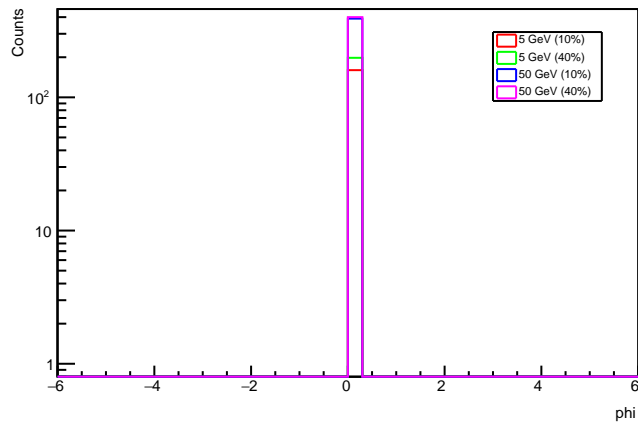
gen leading Mu eta: at least 2 mu w/ pt &gt; 2 GeV and eta &lt; 2.5



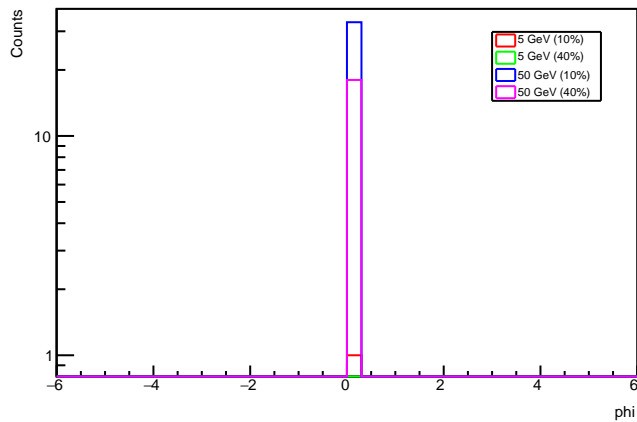
gen leading Mu phi: no cuts



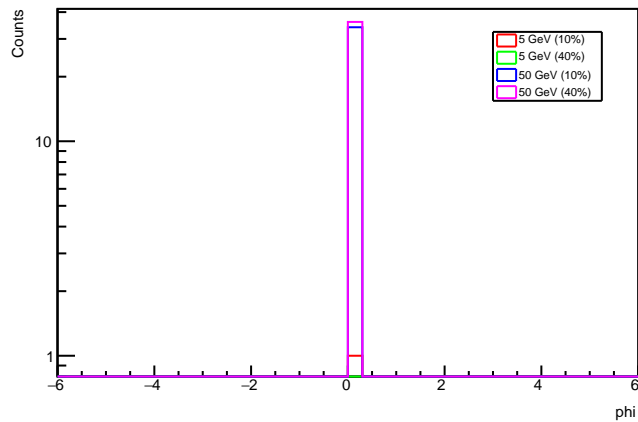
gen leading Mu phi: n\_jet &gt;=1, j1pt &gt; 30 GeV



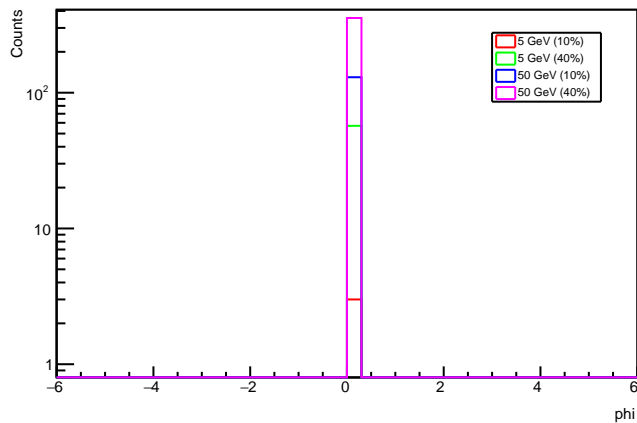
gen leading Mu phi: MET &gt; 120 GeV



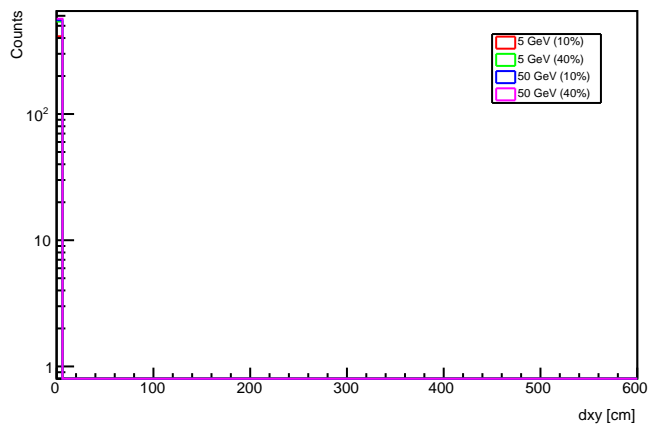
gen leading Mu phi: j1pt &gt;120, at most 2 jets w/ pt &gt;30 GeV



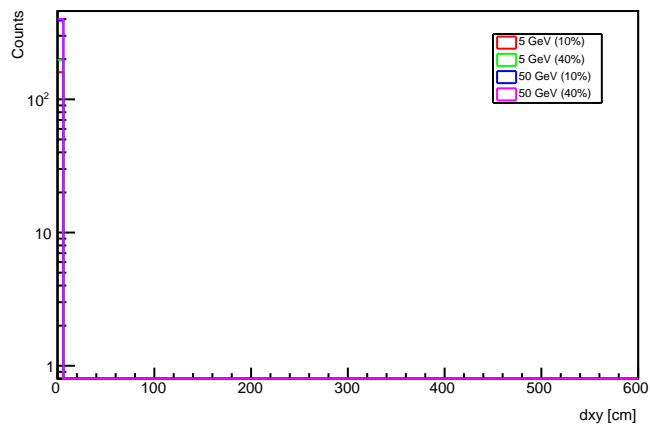
gen leading Mu phi: at least 2 mu w/ pt &gt; 2 GeV and eta &lt; 2.5



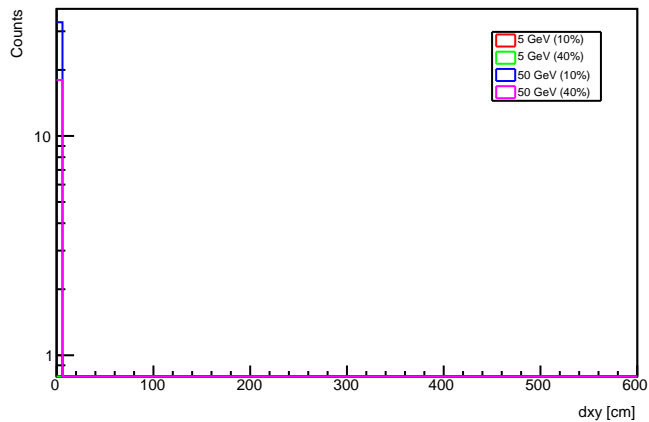
gen leading Mu vxy: no cuts



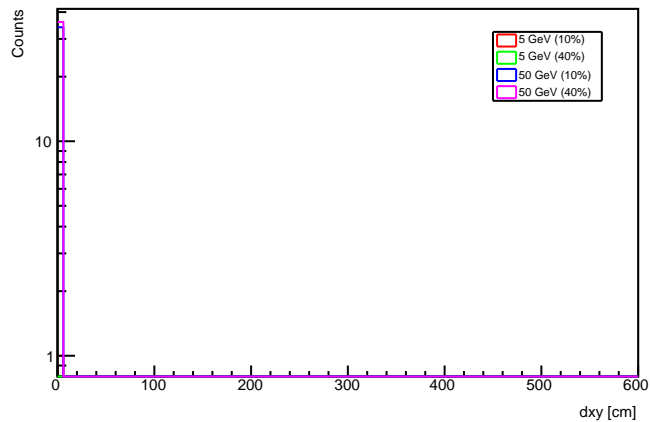
gen leading Mu vxy: n\_jet &gt;=1, j1pt &gt; 30 GeV



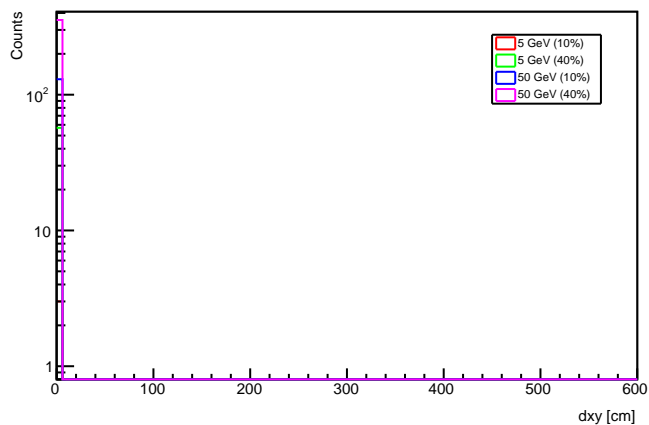
gen leading Mu vxy: MET &gt; 120 GeV



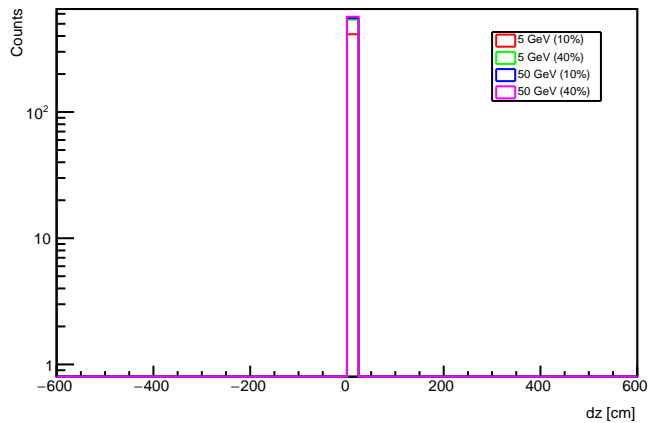
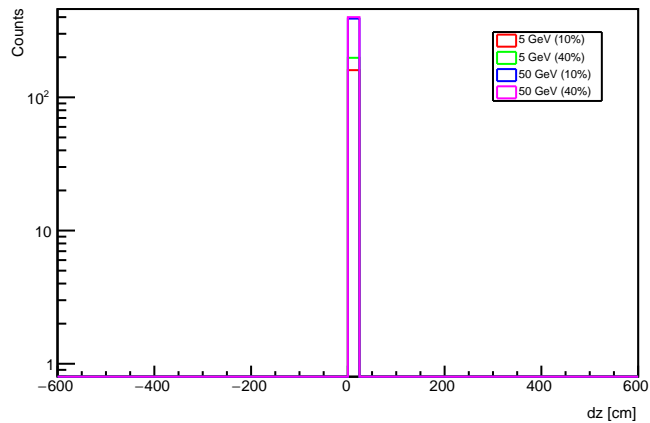
gen leading Mu vxy: j1pt &gt;120, at most 2 jets w/ pt &gt;30 GeV



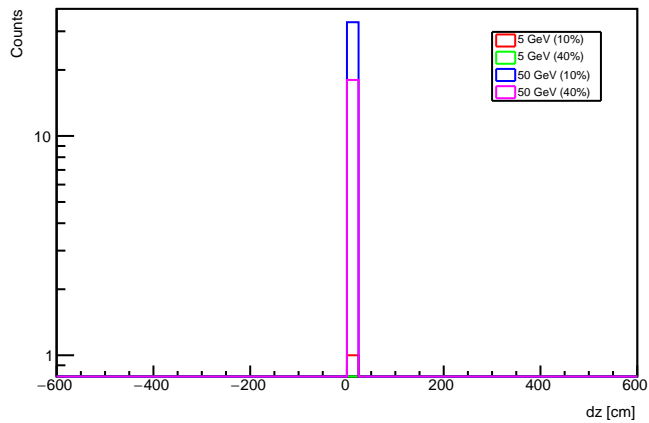
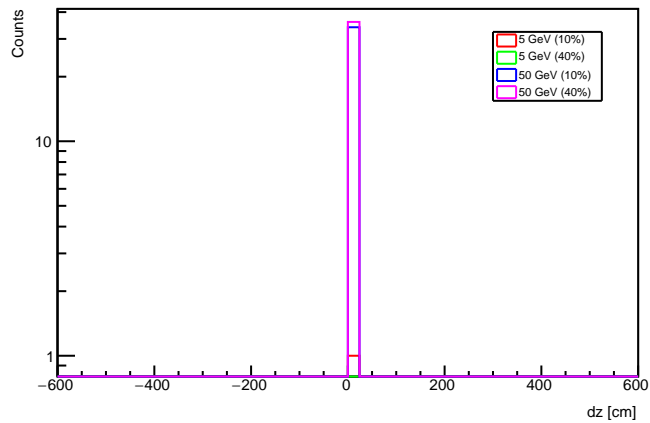
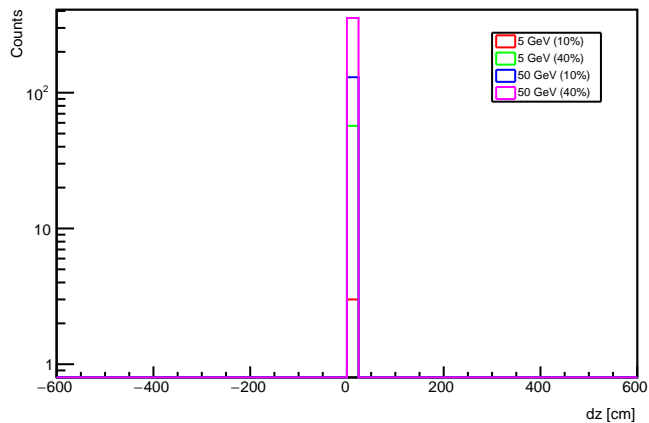
gen leading Mu vxy: at least 2 mu w/ pt &gt; 2 GeV and eta&lt;2.5



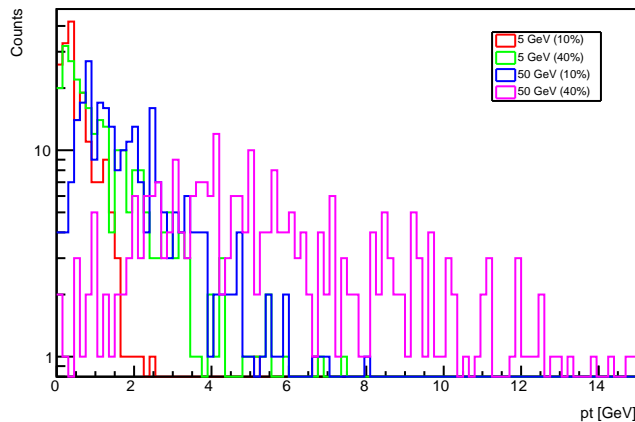
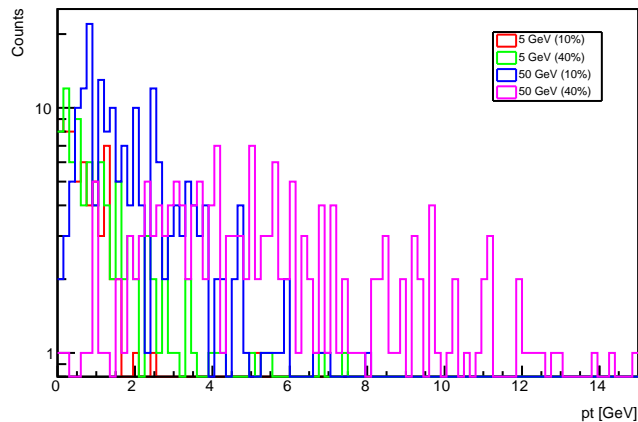
gen leading Mu vz: no cuts

gen leading Mu vz:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

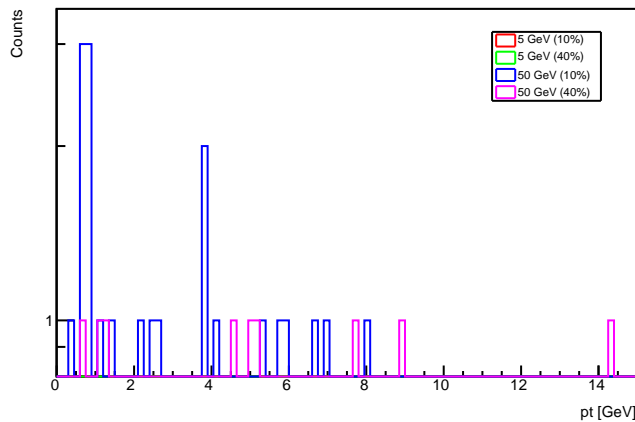
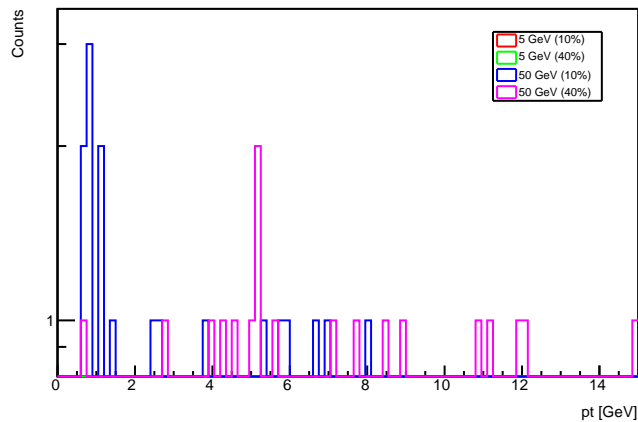
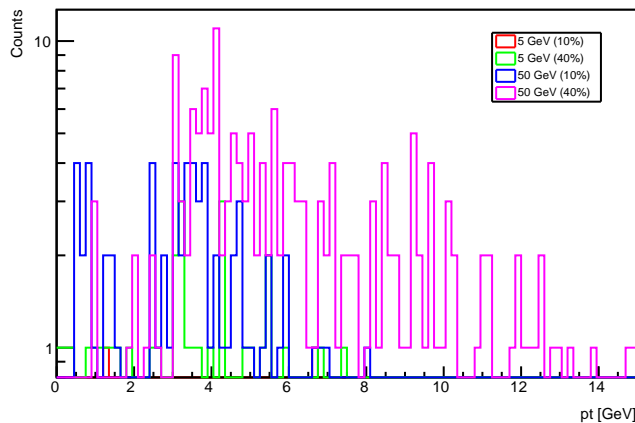
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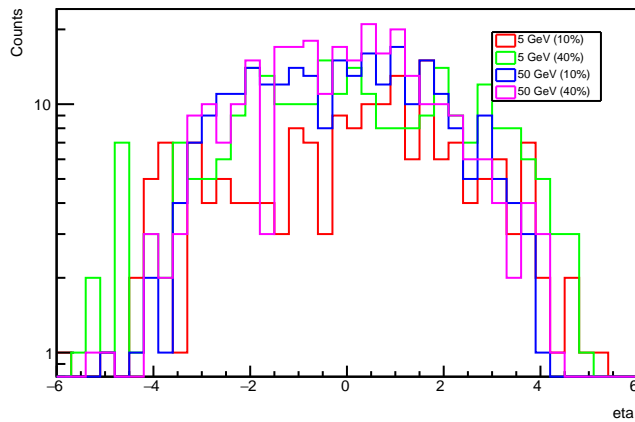
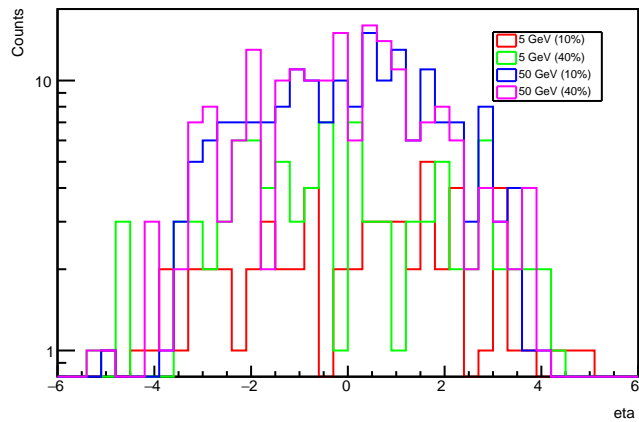
gen subleading Mu pt: no cuts

gen subleading Mu pt:  $n_{\text{jet}} \geq 1$ ,  $j_1 \text{pt} > 30$  GeV

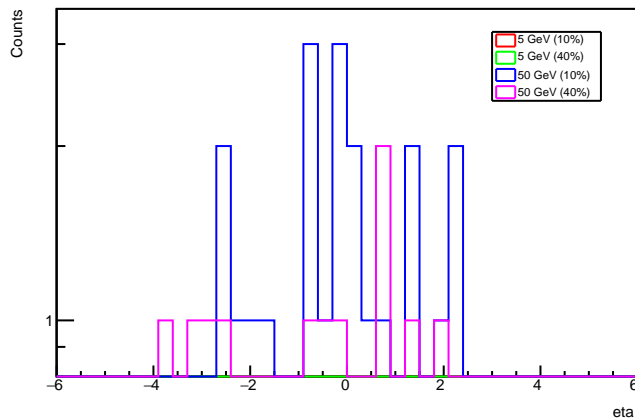
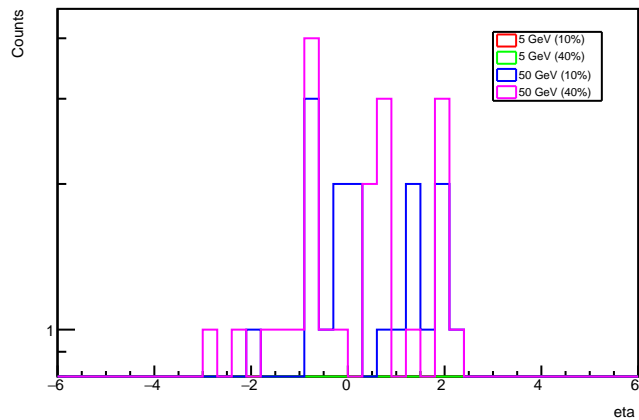
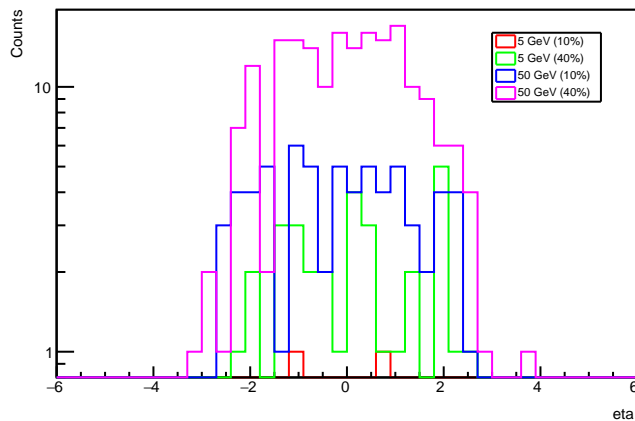
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gen subleading Mu pt:  $j_1 \text{pt} > 120$ , at most 2 jets w/  $\text{pt} > 30$  GeVgen subleading Mu pt: at least 2 mu w/  $\text{pt} \geq 2$  GeV and  $\eta < 2.5$ 

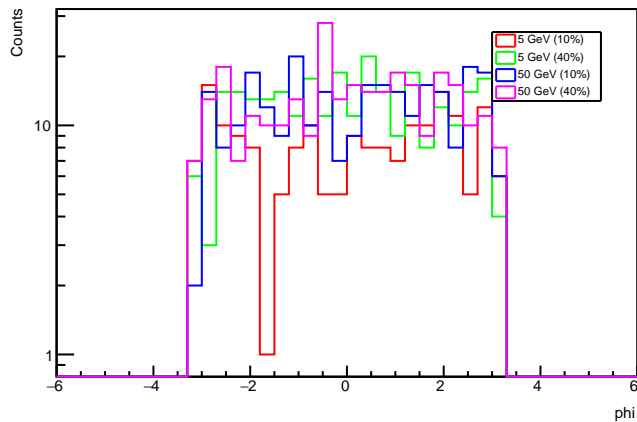
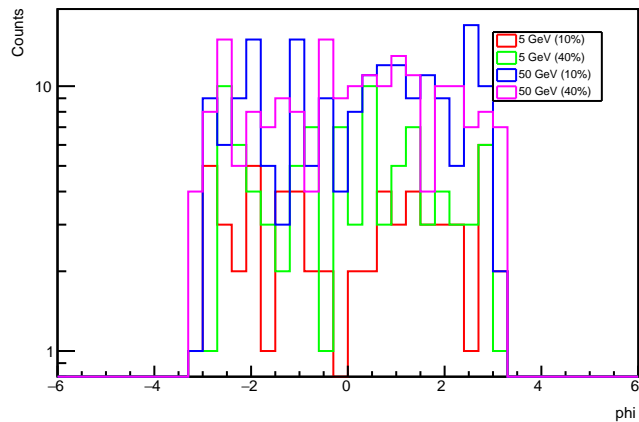
gen subleading Mu eta: no cuts

gen subleading Mu eta:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

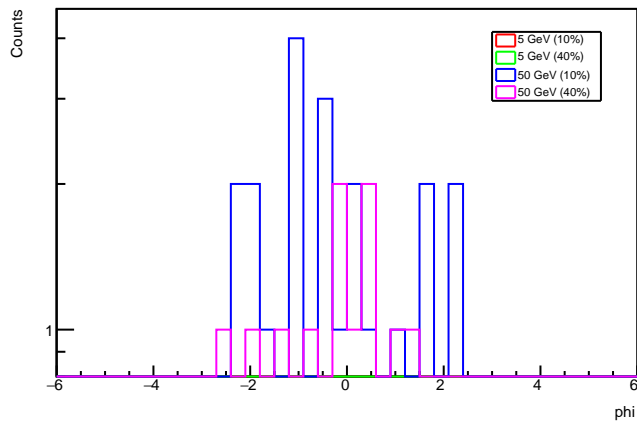
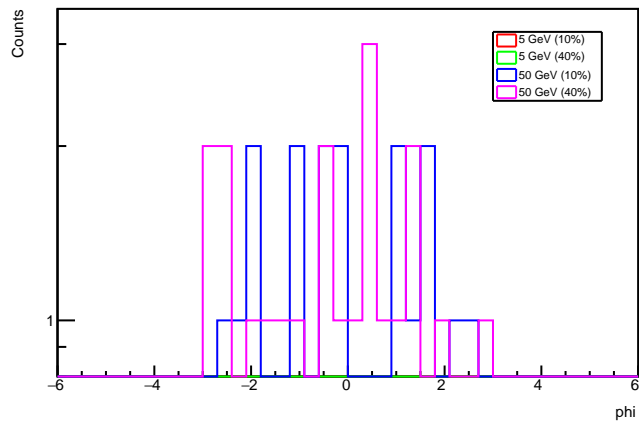
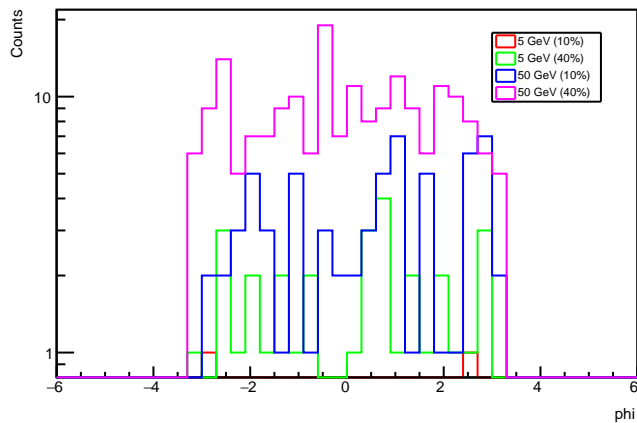
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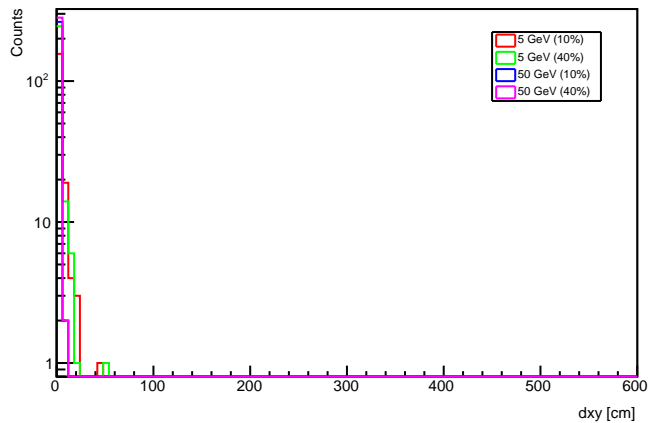
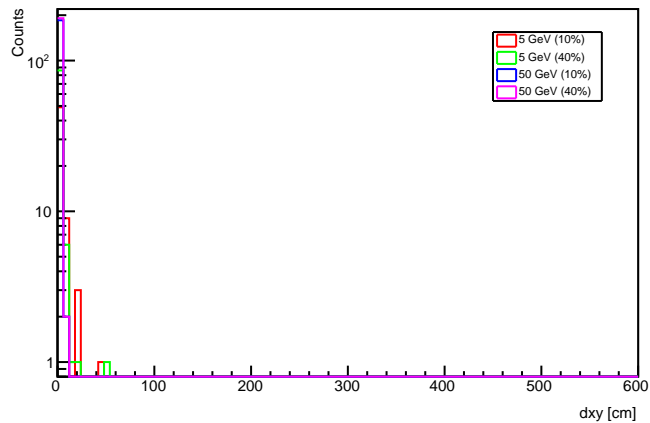
gen subleading Mu phi: no cuts

gen subleading Mu phi:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

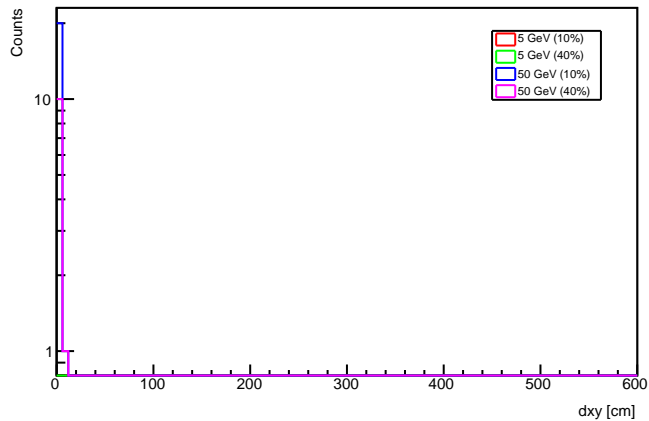
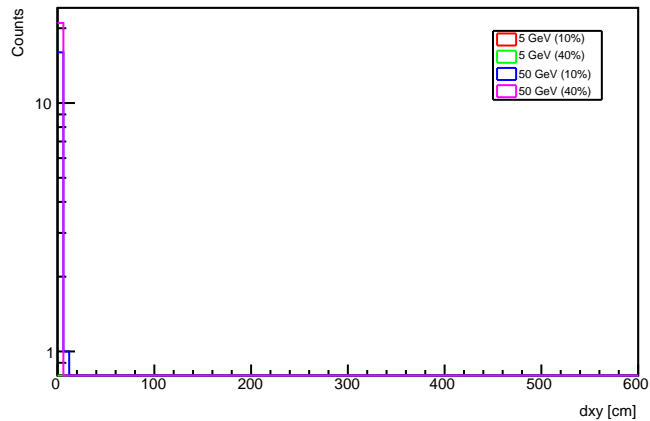
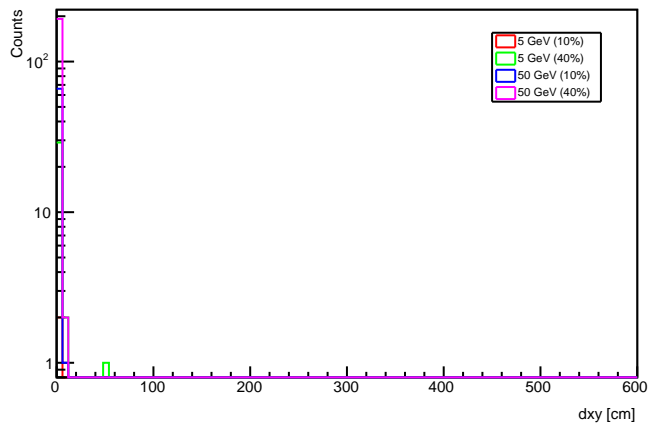
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gen subleading Mu phi:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeVgen subleading Mu phi: at least 2 mu w/  $p_t \geq 2$  GeV and  $\eta < 2.5$ 

gen subleading Mu vxy: no cuts

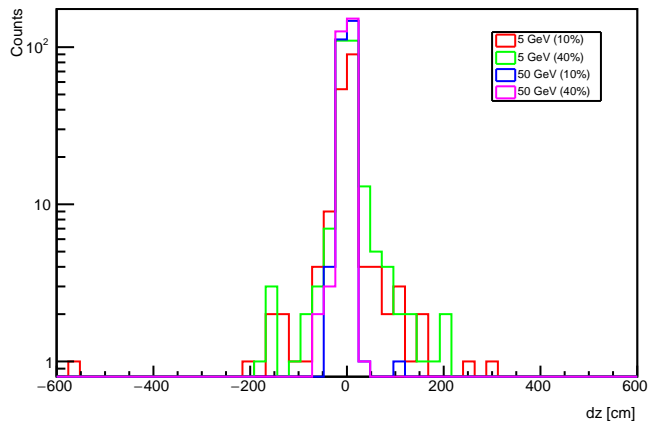
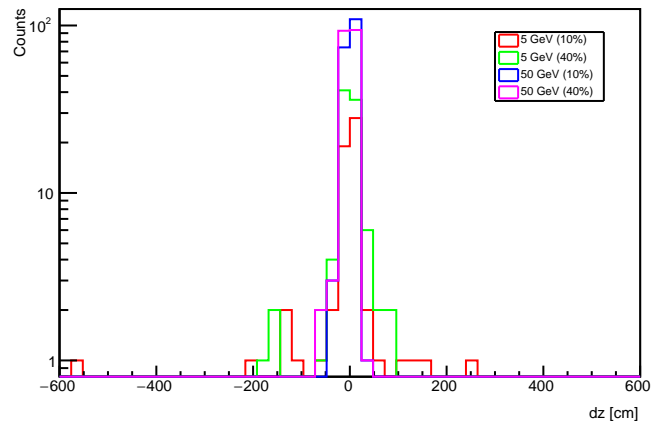
gen subleading Mu vxy:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

gen subleading Mu vxy: MET &gt; 120 GeV

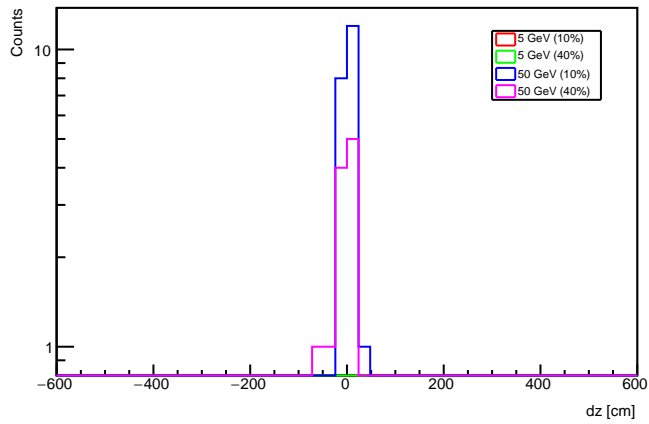
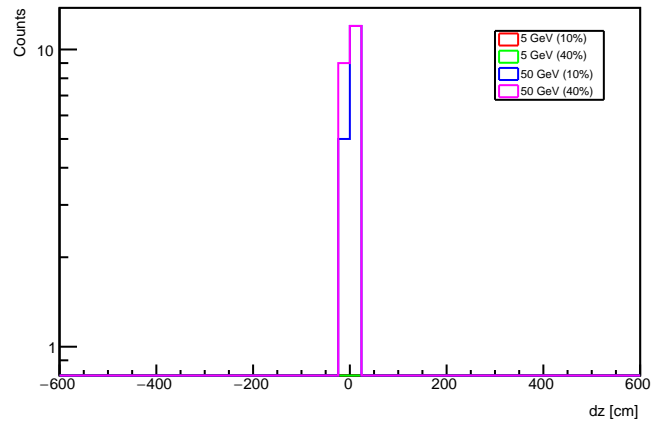
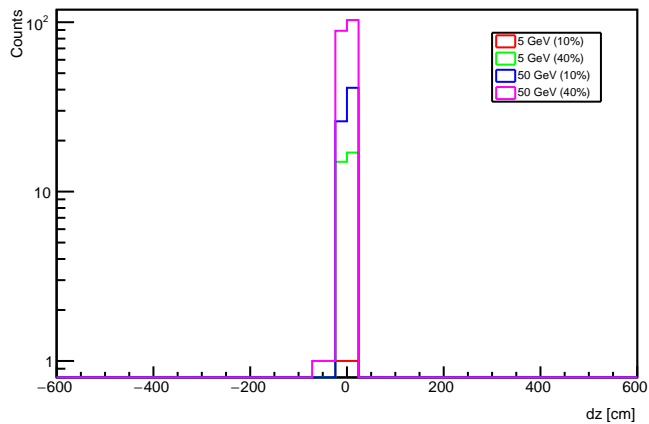
gen subleading Mu vxy:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeVgen subleading Mu vxy: at least 2 mu w/  $p_t \geq 2$  GeV and  $|\eta| < 2.5$ 



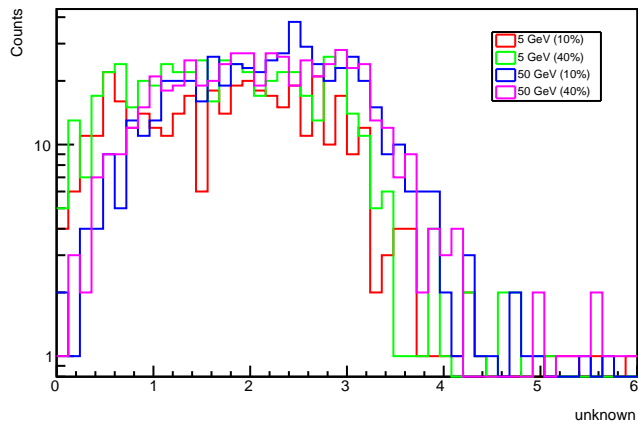
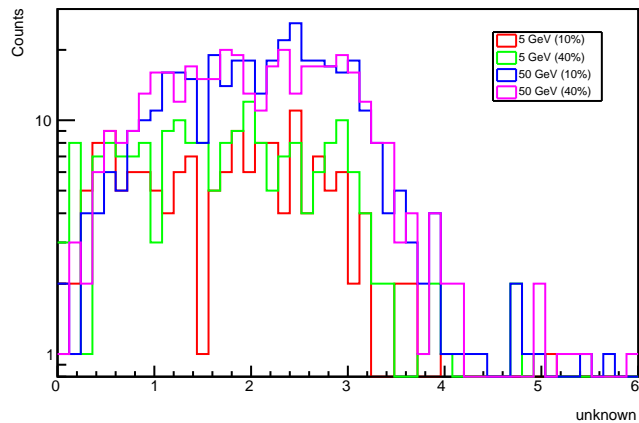
gen subleading Mu vz: no cuts

gen subleading Mu vz:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

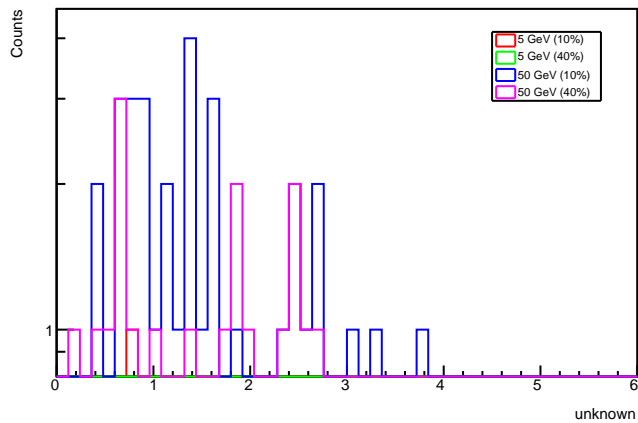
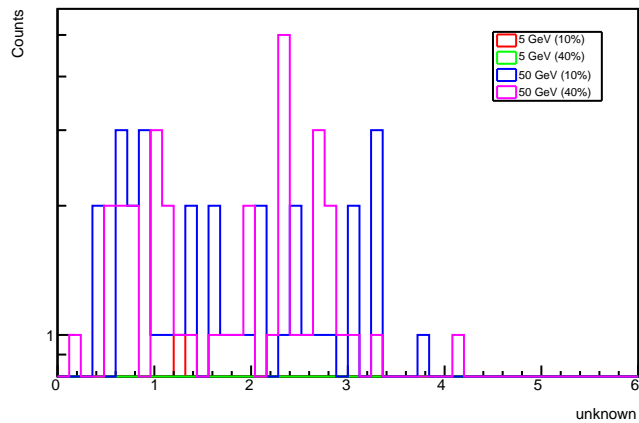
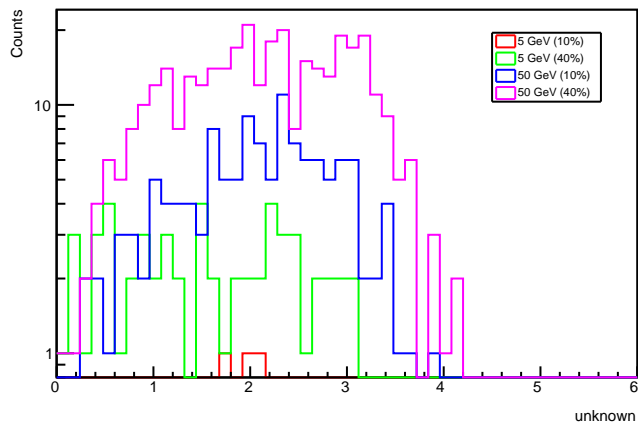
gen subleading Mu vz: MET &gt; 120 GeV

gen subleading Mu vz:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeVgen subleading Mu vz: at least 2 mu w/  $p_t \geq 2$  GeV and  $|\eta| < 2.5$ 

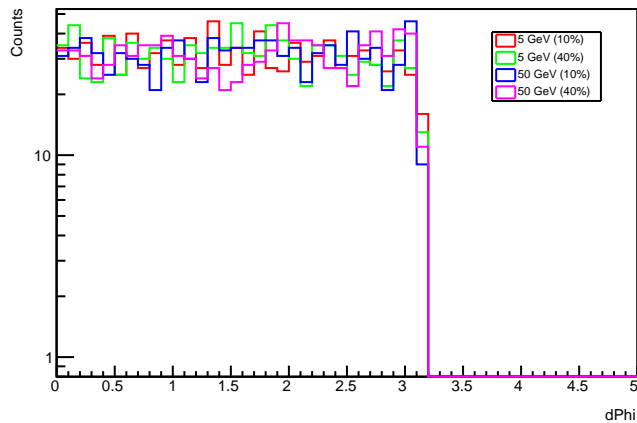
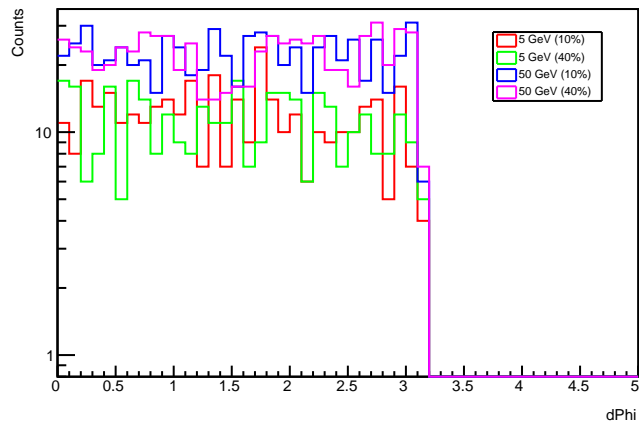
dR: gen leading mu and subleading mu: no cuts

dR: gen leading mu and subleading mu:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

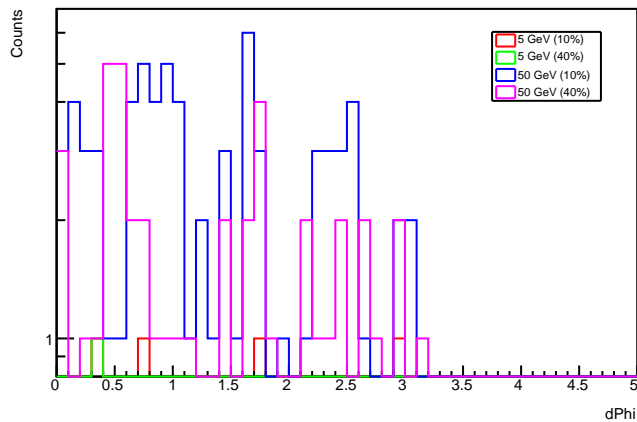
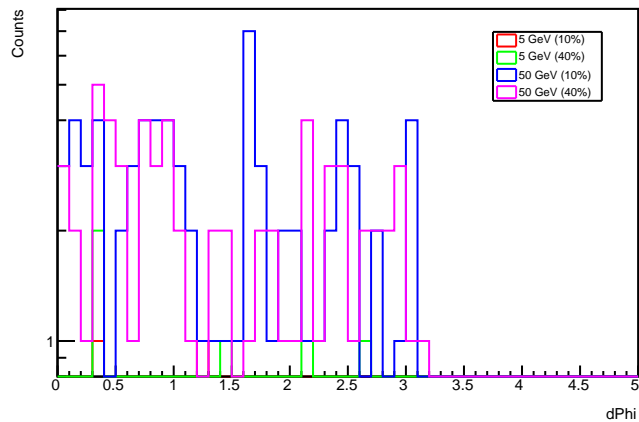
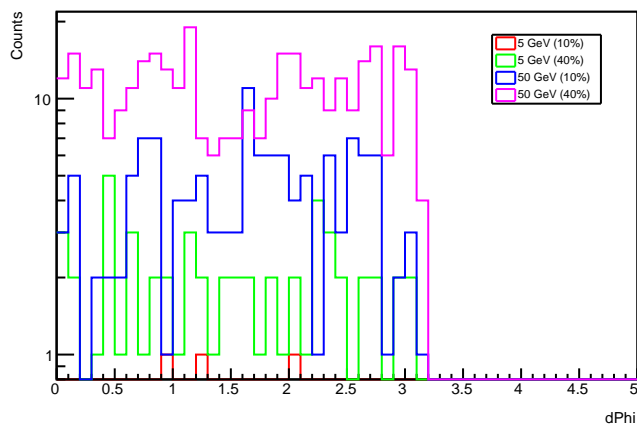
dR: gen leading mu and subleading mu: MET &gt; 120 GeV

dR: gen leading mu and subleading mu:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_{\text{T}} > 30$  GeVdR: gen leading mu and subleading mu: at least 2 mu w/  $p_{\text{T}} \geq 2$  GeV and  $\eta < 2.5$ 

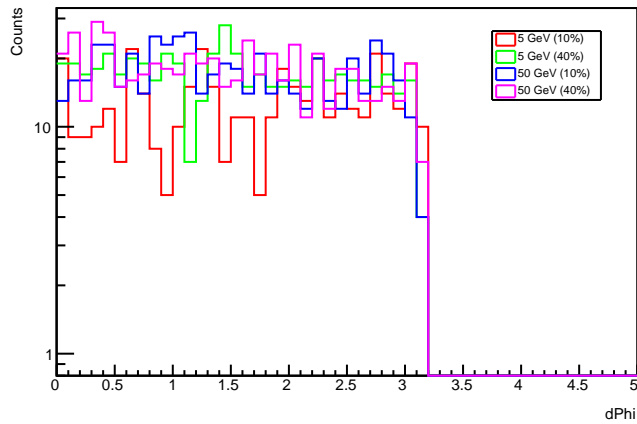
dPhi: gen MET and leading mu: no cuts

dPhi: gen MET and leading mu:  $n_{\text{jet}} \geq 1, j_{1\text{pt}} > 30 \text{ GeV}$ 

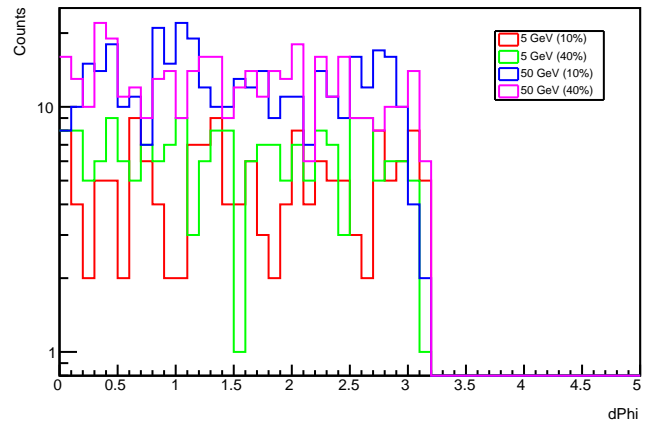
dPhi: gen MET and leading mu: MET &gt; 120 GeV

dPhi: gen MET and leading mu:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30 \text{ GeV}$ dPhi: gen MET and leading mu: at least 2 mu w/  $p_t \geq 2 \text{ GeV}$  and  $\eta < 2.5$ 

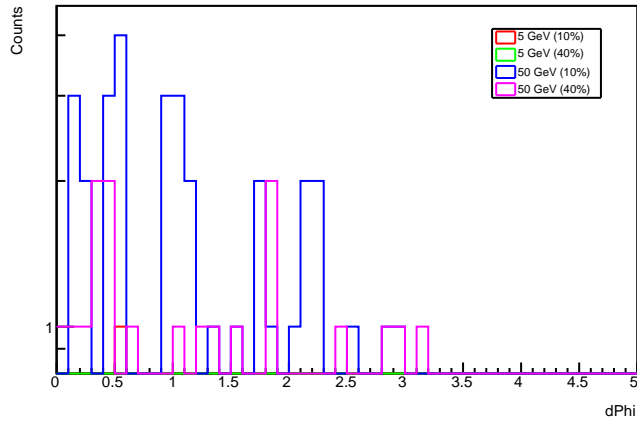
dPhi: gen leading mu and subleading mu: no cuts



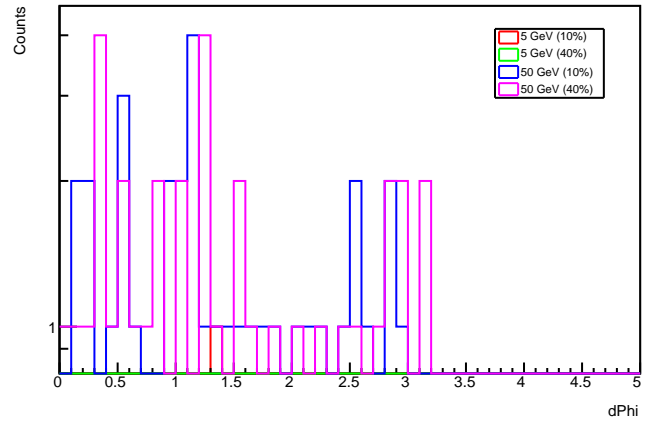
dPhi: gen leading mu and subleading mu:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV



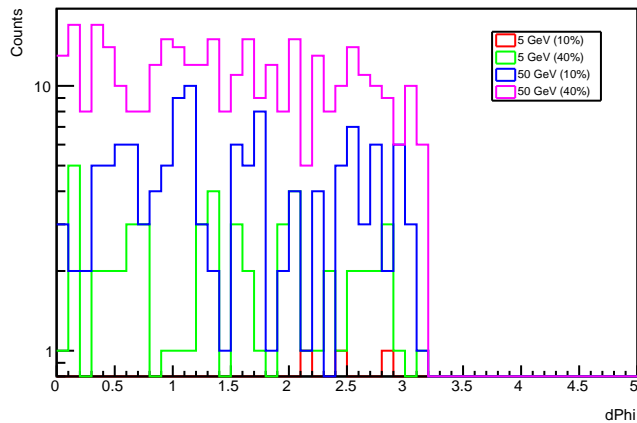
dPhi: gen leading mu and subleading mu: MET > 120 GeV



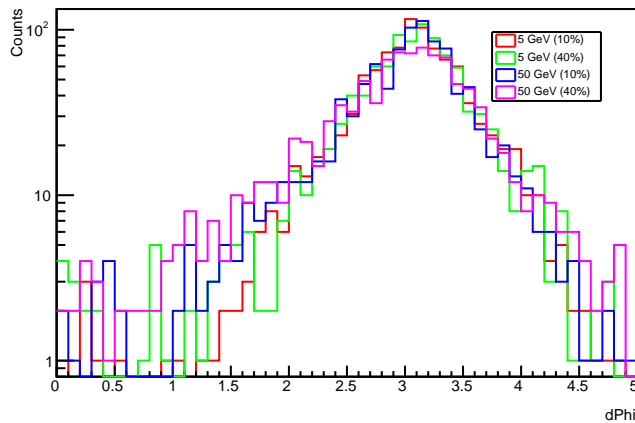
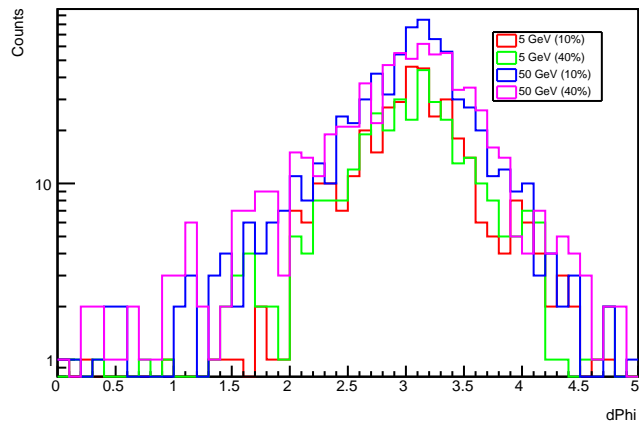
dPhi: gen leading mu and subleading mu:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeV



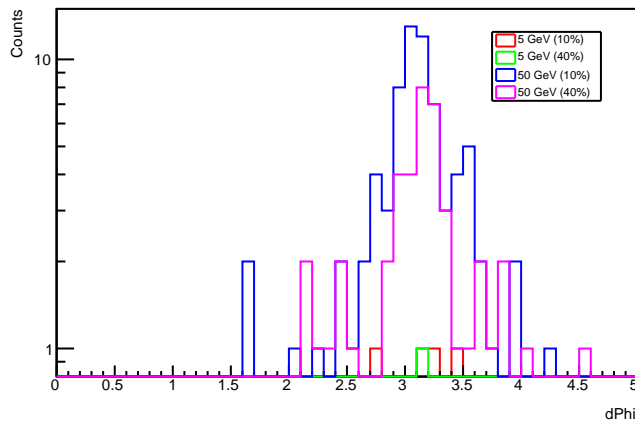
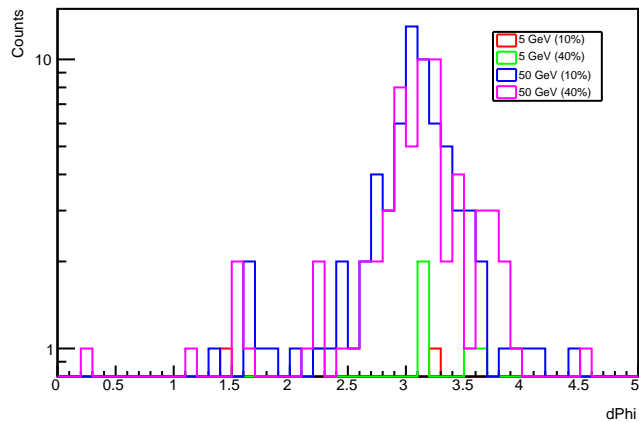
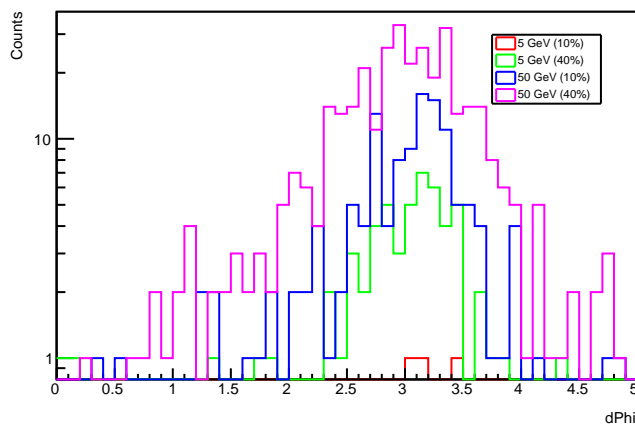
dPhi: gen leading mu and subleading mu: at least 2 mu w/  $p_t \geq 2$  GeV and  $\eta < 2.5$



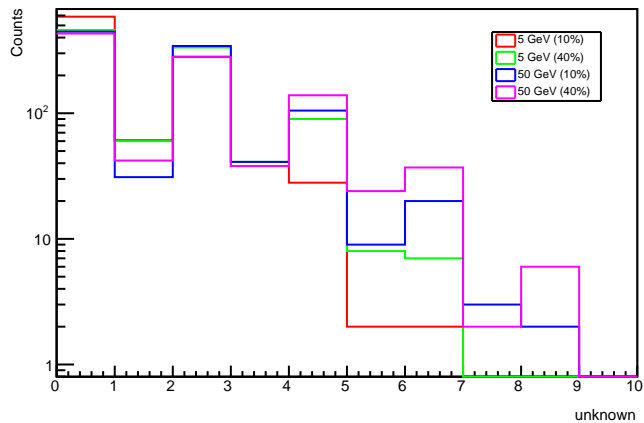
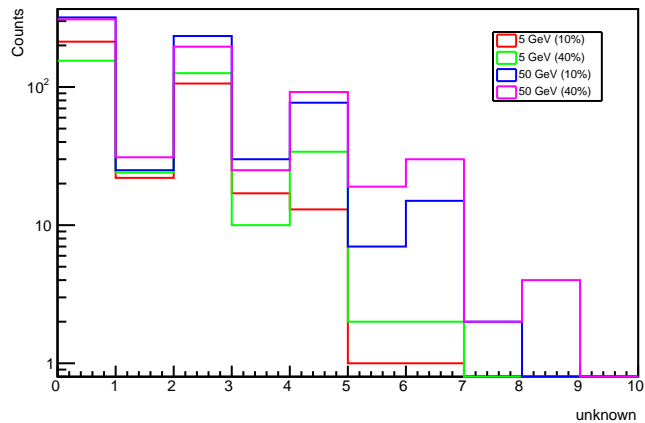
dPhi: gen MET and leading jet: no cuts

dPhi: gen MET and leading jet:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

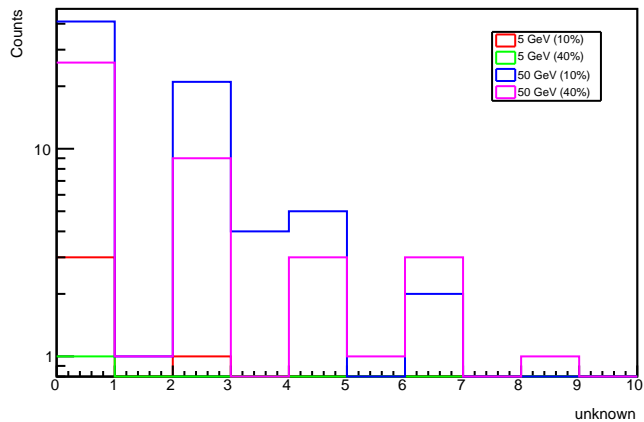
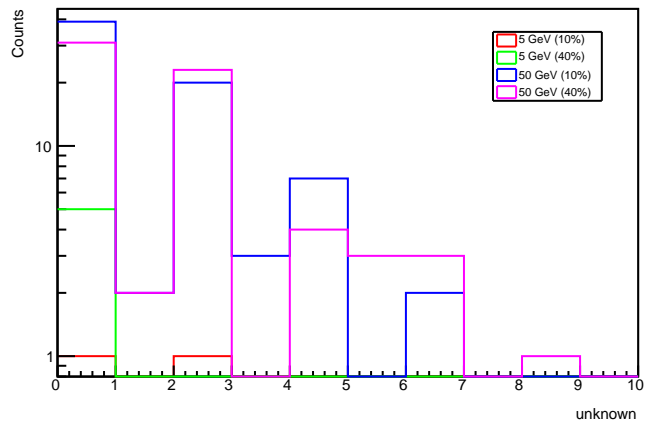
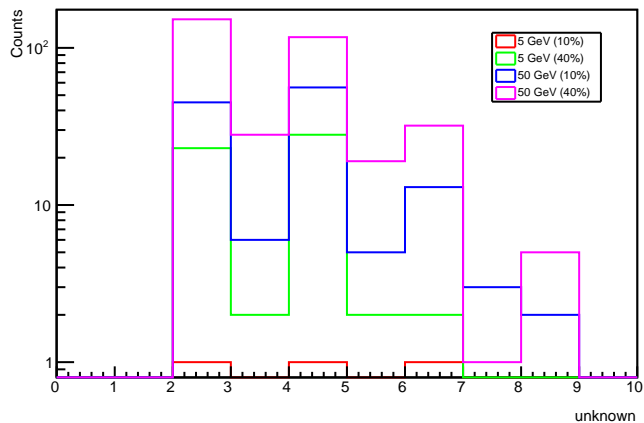
dPhi: gen MET and leading jet: MET &gt; 120 GeV

dPhi: gen MET and leading jet:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeVdPhi: gen MET and leading jet: at least 2 mu w/  $p_t \geq 2$  GeV and  $\eta < 2.5$ 

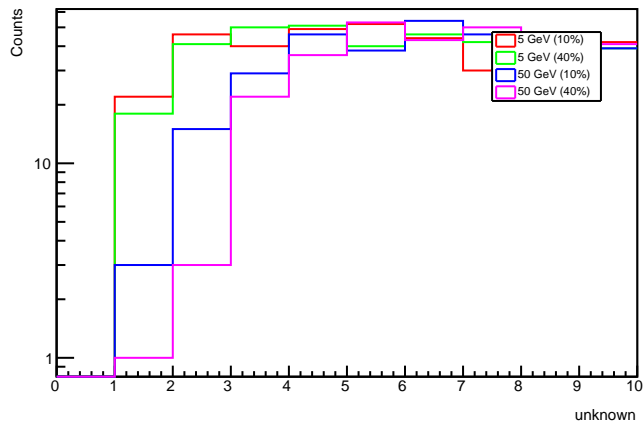
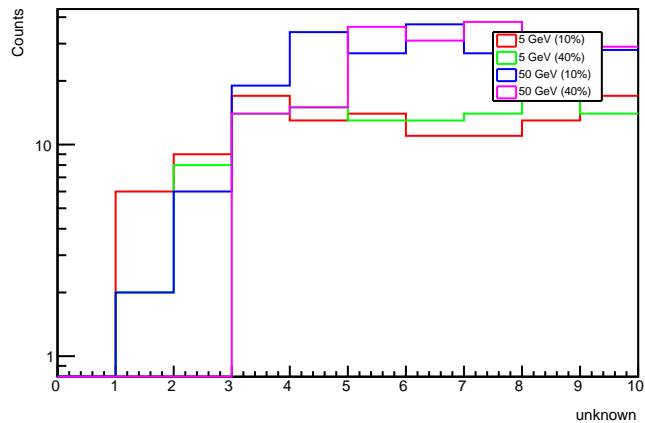
gen number of jets: no cuts

gen number of jets:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

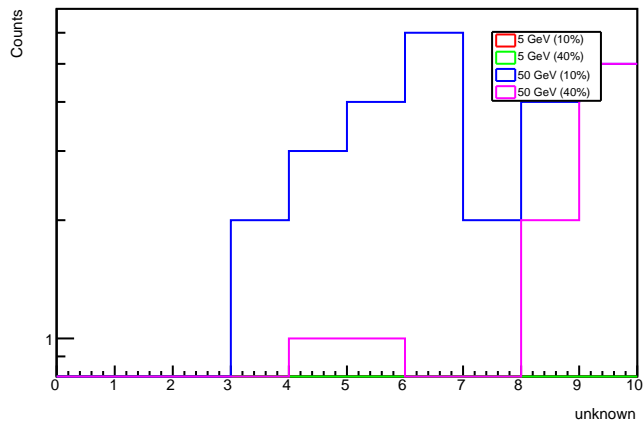
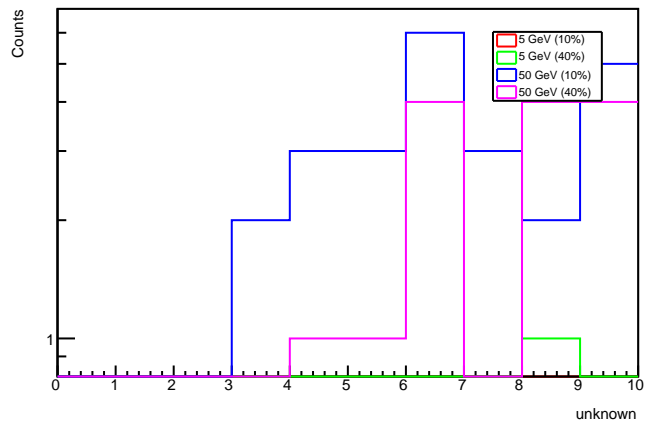
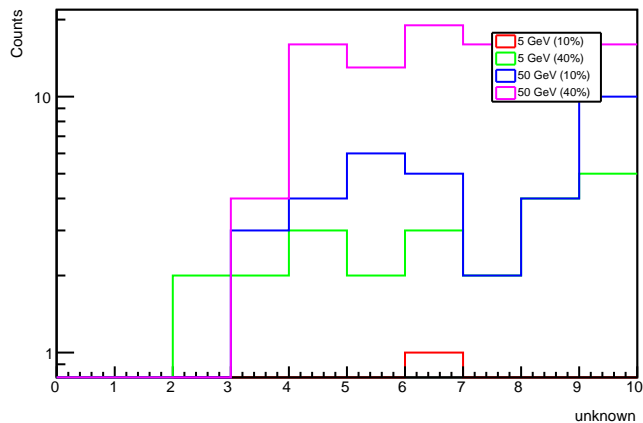
gen number of jets: MET &gt; 120 GeV

gen number of jets:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeVgen number of jets: at least 2 mu w/  $p_t \geq 2$  GeV and  $\eta < 2.5$ 

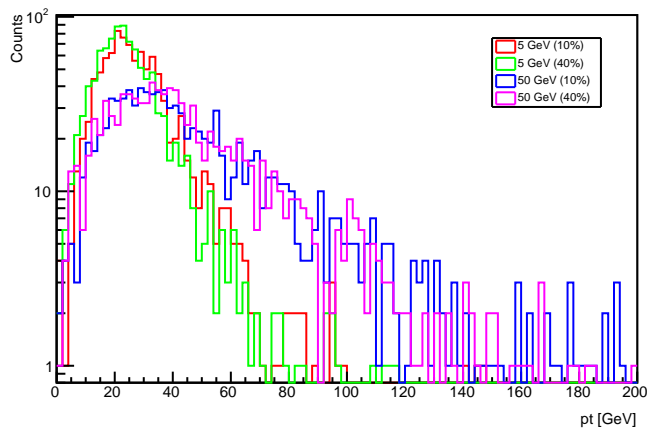
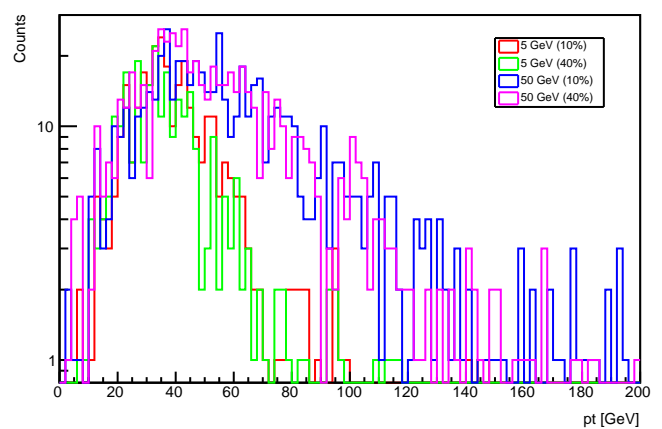
gen number of mu: no cuts

gen number of mu:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

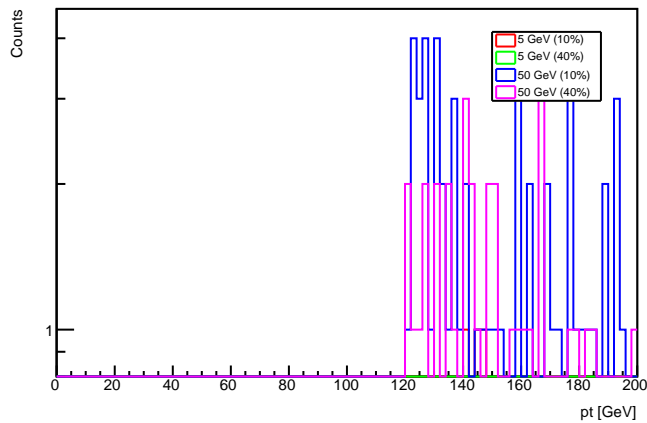
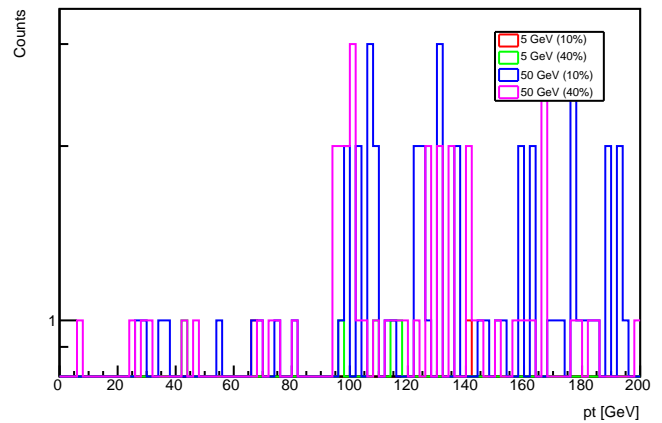
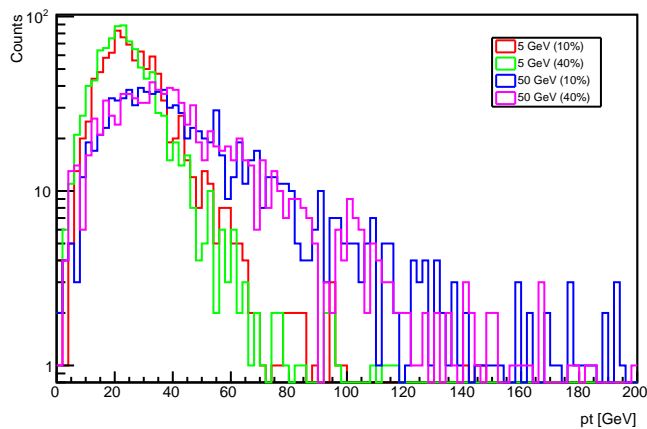
gen number of mu: MET &gt; 120 GeV

gen number of mu:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeVgen number of mu: at least 2 mu w/  $p_t \geq 2$  GeV and  $|\eta| < 2.5$ 

reco leading MET: no cuts

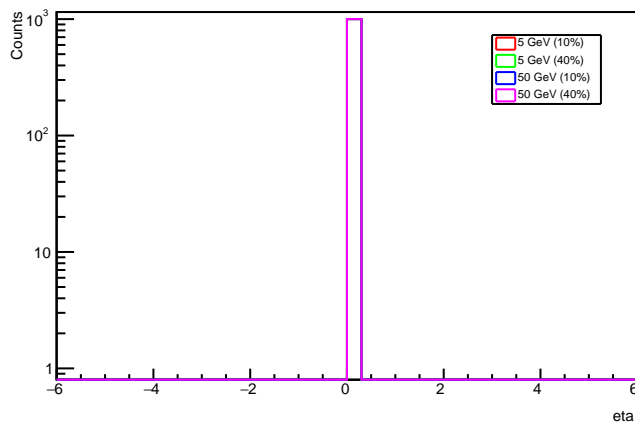
reco leading MET:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

reco leading MET: MET &gt; 120 GeV

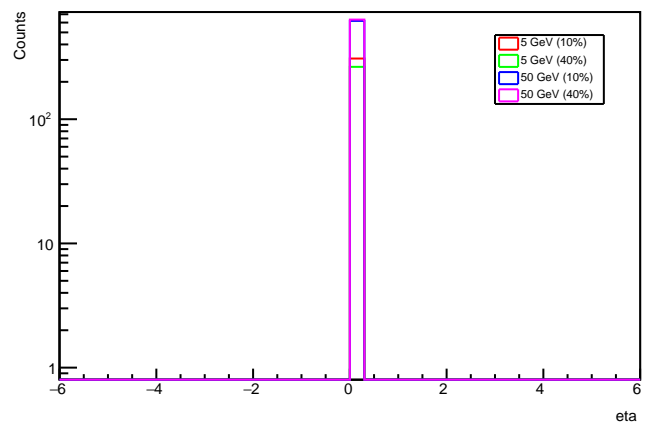
reco leading MET:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $pt > 30$  GeVreco leading MET: at least 2 mu w/  $pt \geq 2$  GeV and  $\eta < 2.5$ 



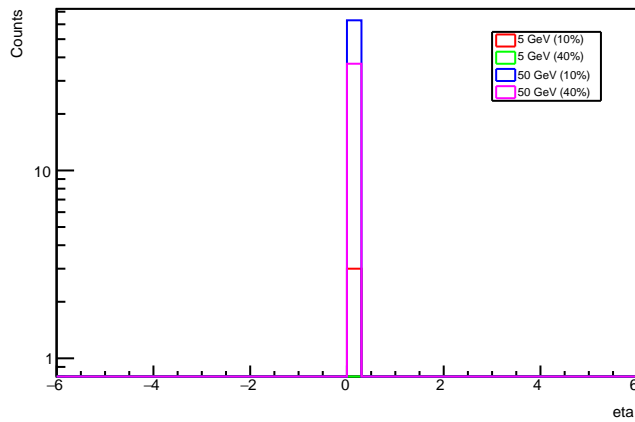
reco leading Met eta: no cuts



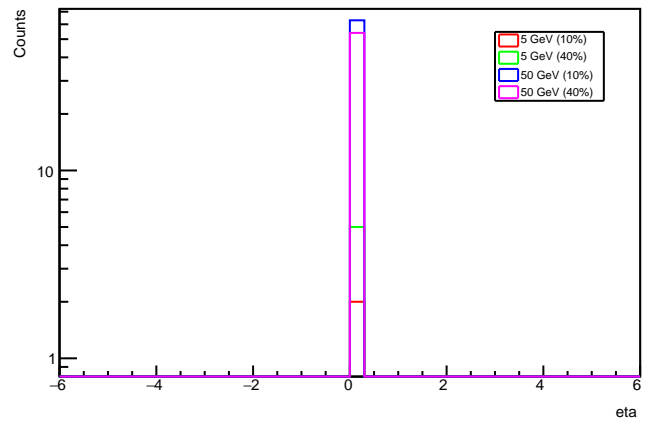
reco leading Met eta: n\_jet &gt;=1, j1pt &gt; 30 GeV



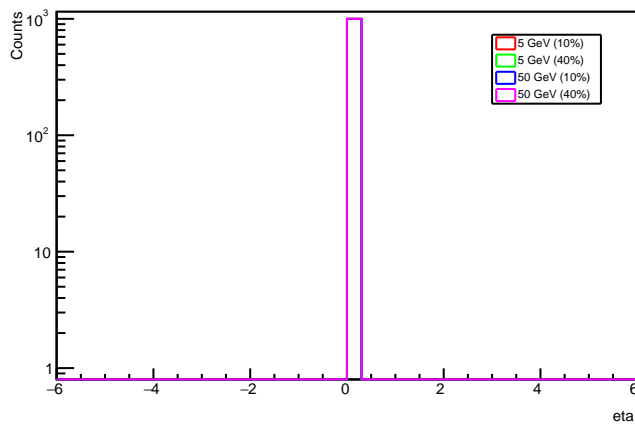
reco leading Met eta: MET &gt; 120 GeV



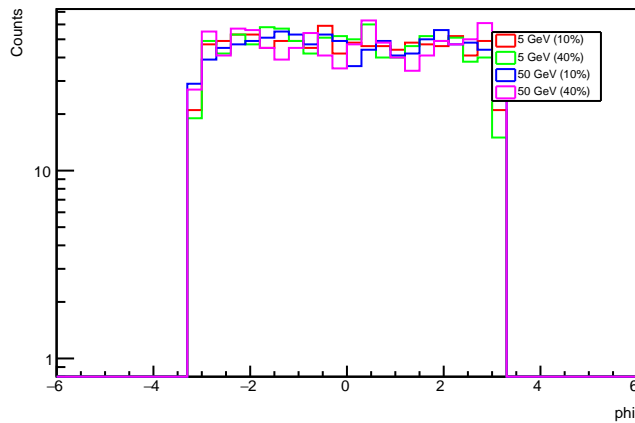
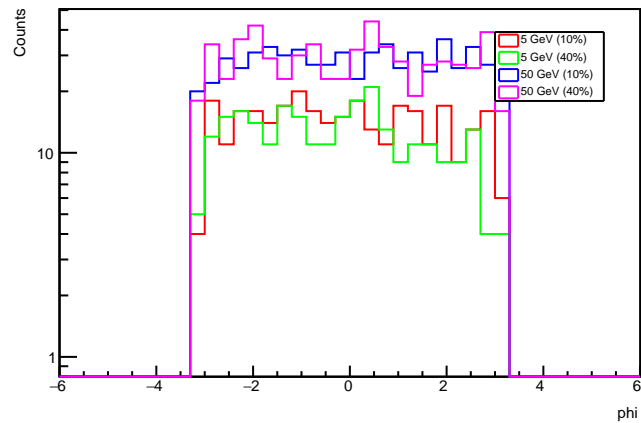
reco leading Met eta: j1pt &gt;120, at most 2 jets w/ pt &gt;30 GeV



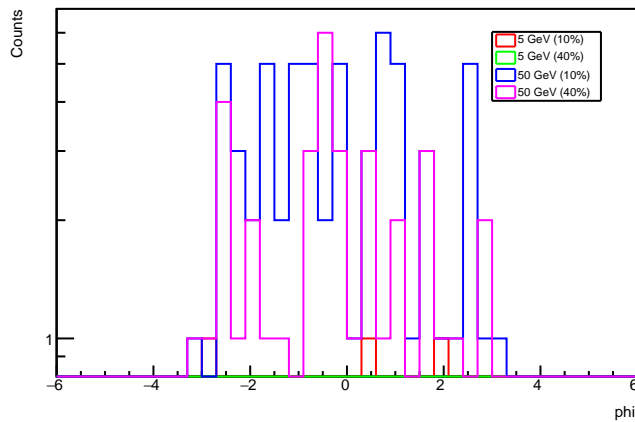
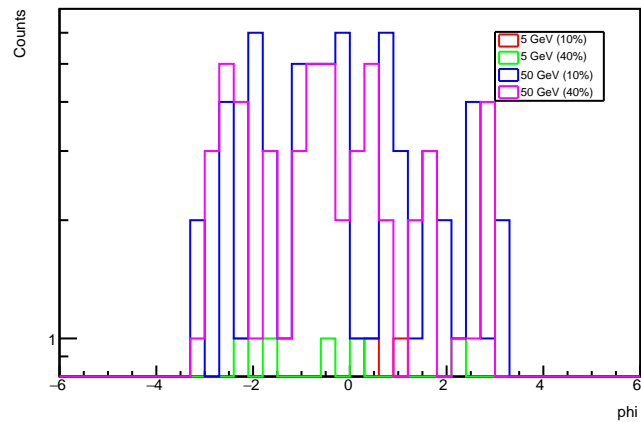
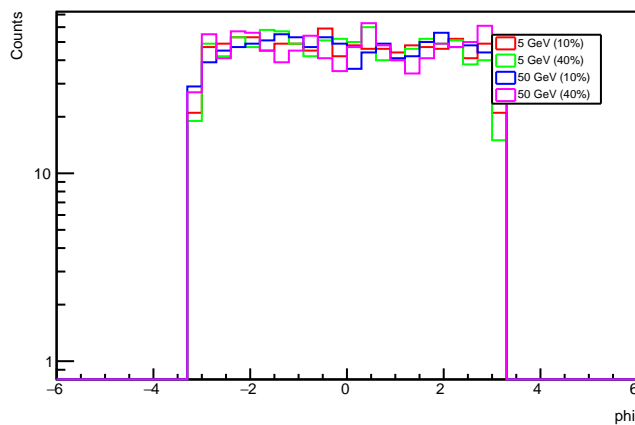
reco leading Met eta: at least 2 mu w/ pt &gt; 2 GeV and eta &lt; 2.5



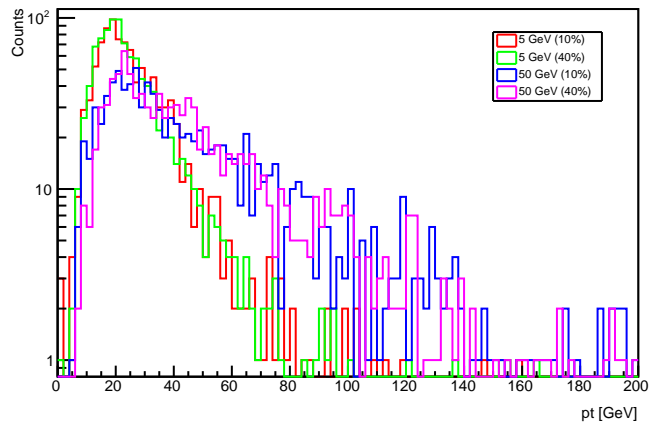
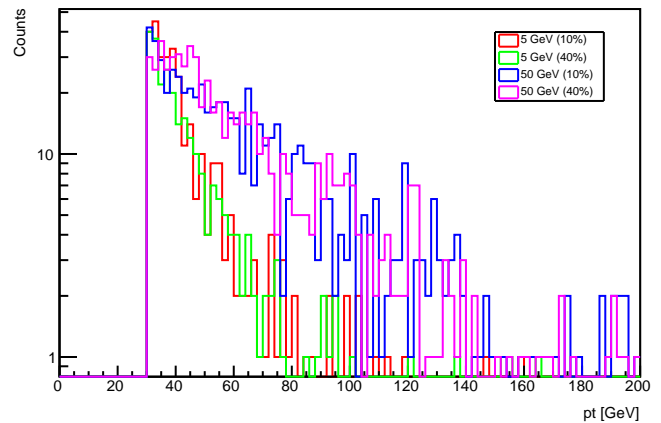
reco leading Met phi: no cuts

reco leading Met phi:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

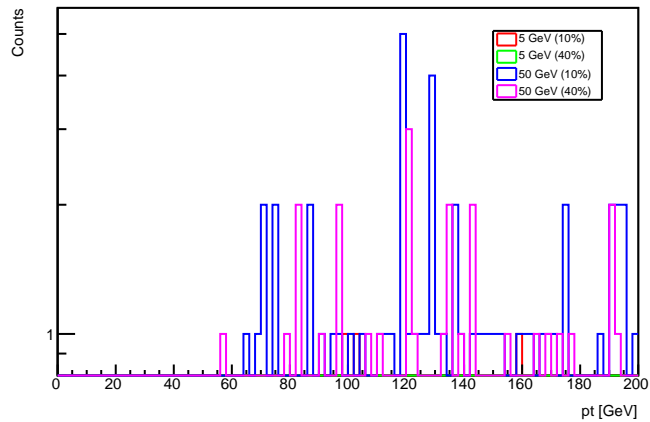
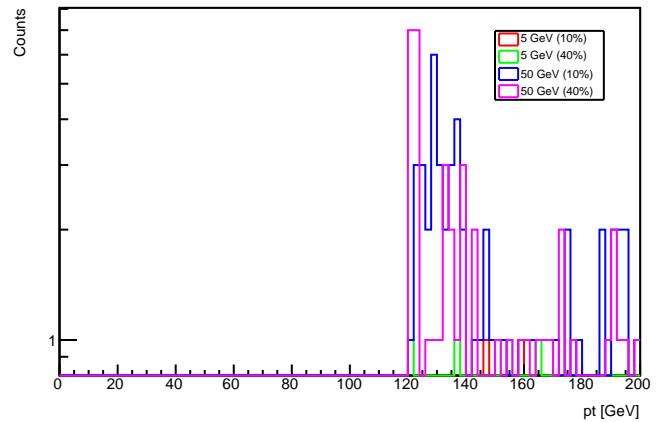
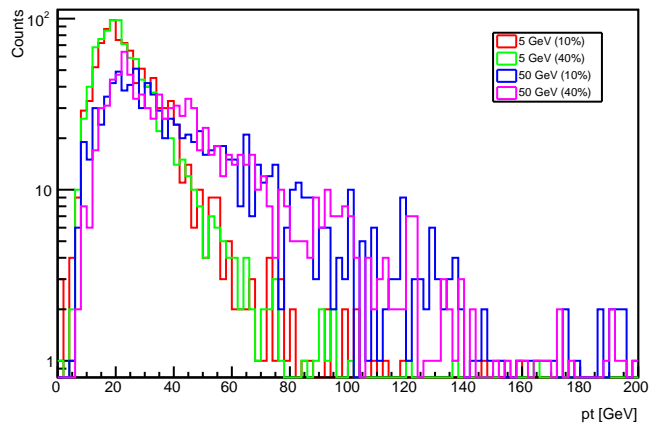
reco leading Met phi: MET &gt; 120 GeV

reco leading Met phi:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeVreco leading Met phi: at least 2 mu w/  $p_t \geq 2$  GeV and  $\eta < 2.5$ 

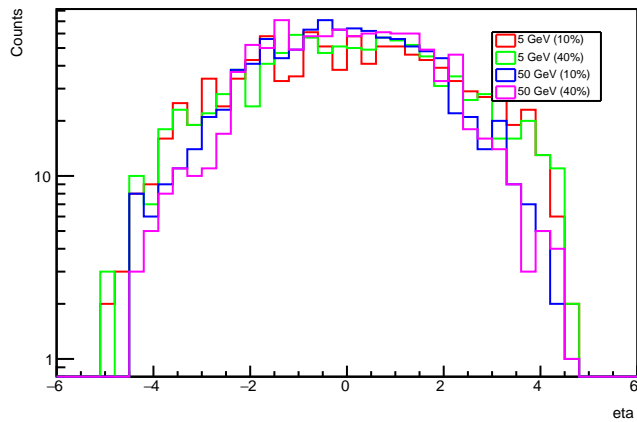
reco leading Jet pt: no cuts

reco leading Jet pt:  $n_{\text{jet}} \geq 1$ ,  $j_1 \text{pt} > 30 \text{ GeV}$ 

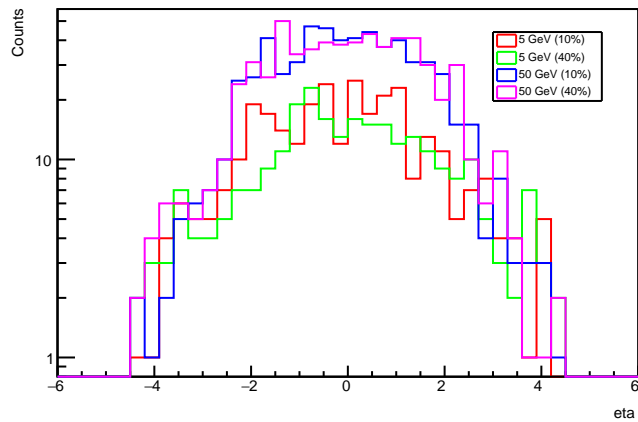
reco leading Jet pt: MET &gt; 120 GeV

reco leading Jet pt:  $j_1 \text{pt} > 120$ , at most 2 jets w/  $\text{pt} > 30 \text{ GeV}$ reco leading Jet pt: at least 2 mu w/  $\text{pt} \geq 2 \text{ GeV}$  and  $\eta < 2.5$ 

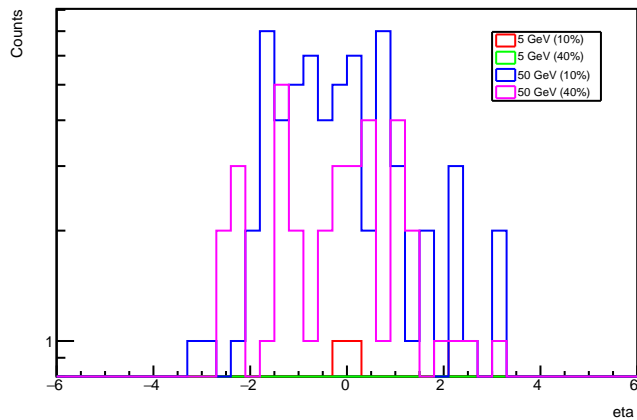
reco leading Jet eta: no cuts



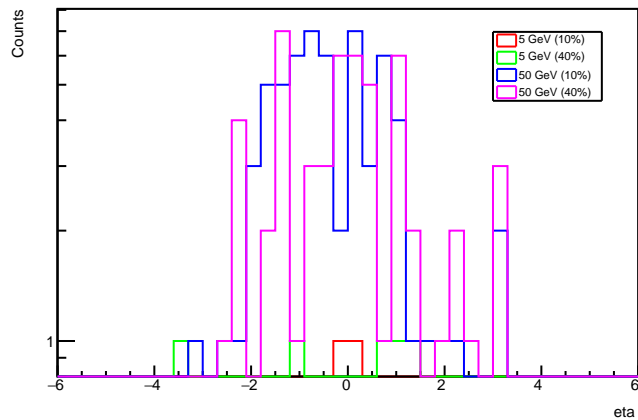
reco leading Jet eta:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV



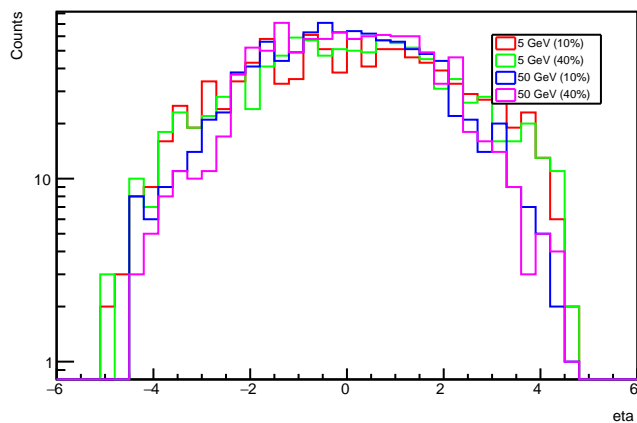
reco leading Jet eta: MET > 120 GeV



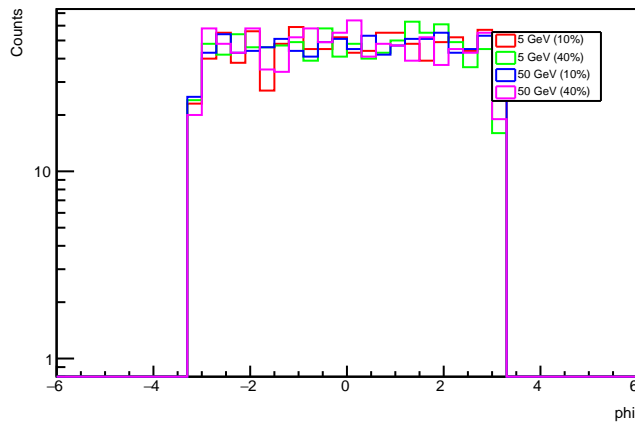
reco leading Jet eta:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeV



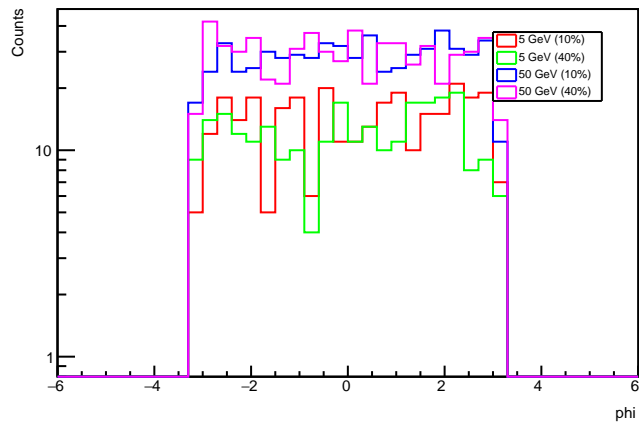
reco leading Jet eta: at least 2 mu w/  $p_t \geq 2$  GeV and  $\eta < 2.5$



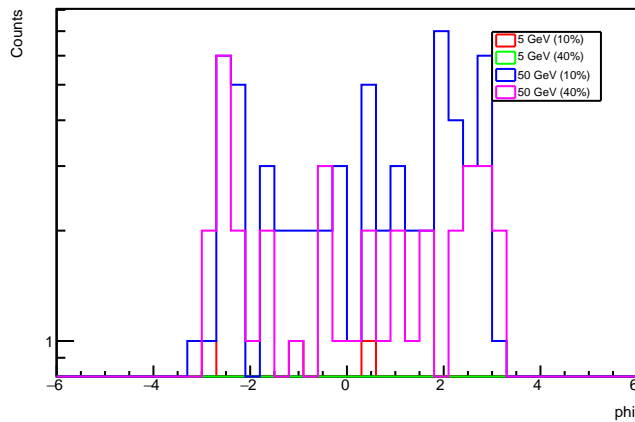
reco leading Jet phi: no cuts



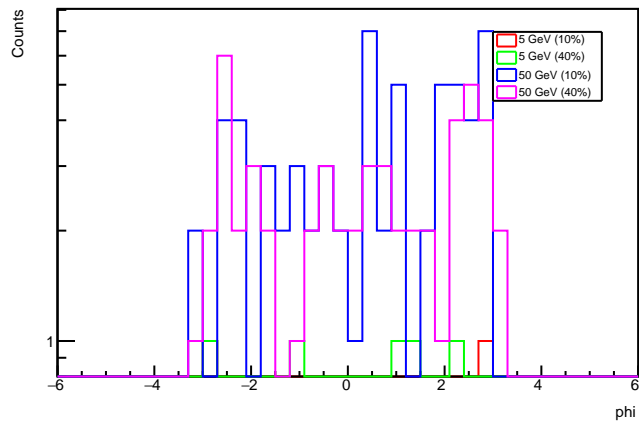
reco leading Jet phi: n\_jet &gt;=1, j1pt &gt; 30 GeV



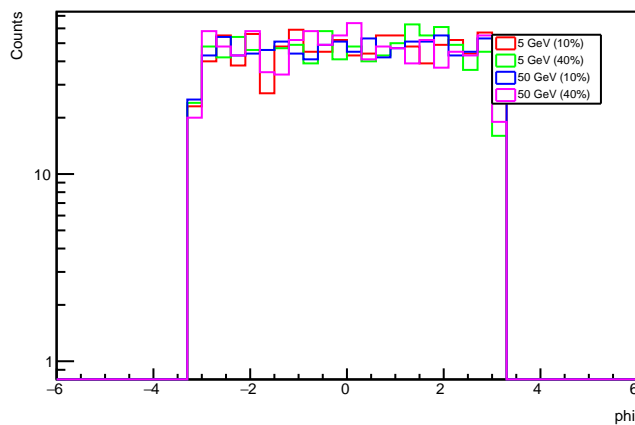
reco leading Jet phi: MET &gt; 120 GeV



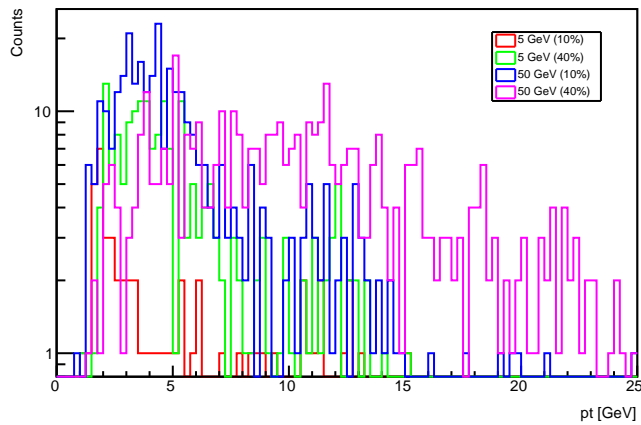
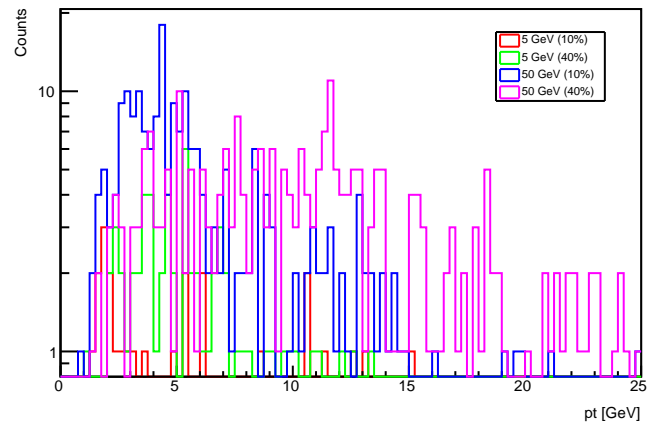
reco leading Jet phi: j1pt &gt;120, at most 2 jets w/ pt &gt;30 GeV



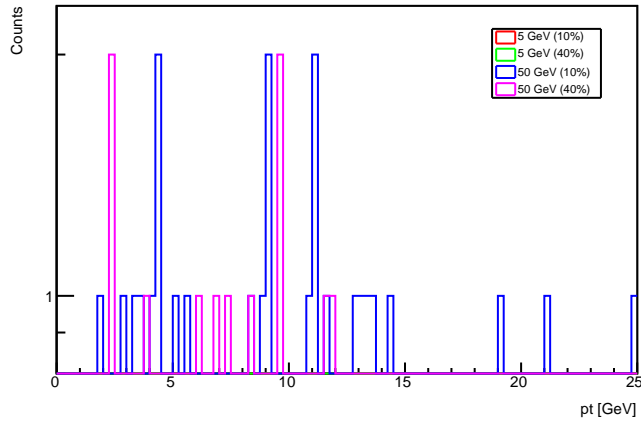
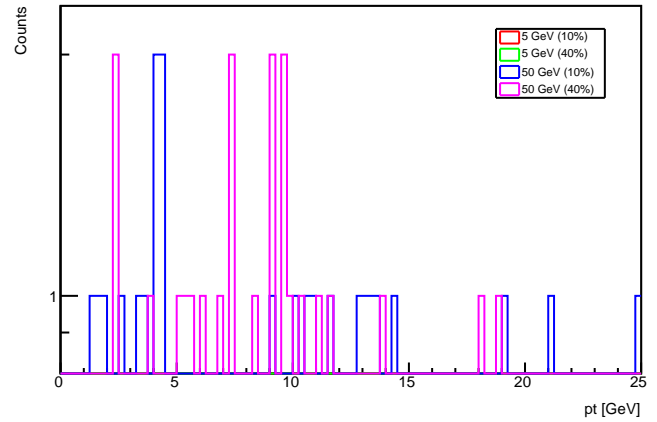
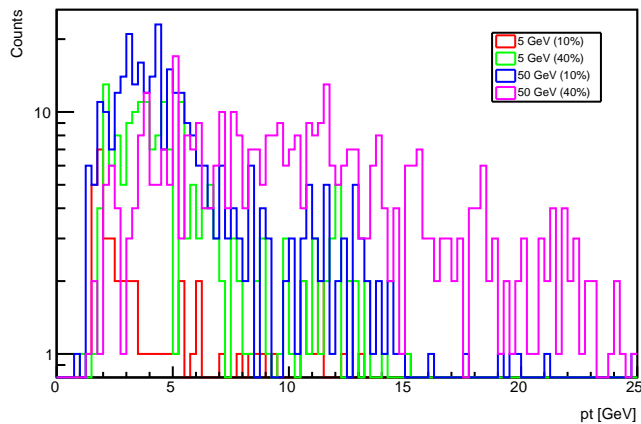
reco leading Jet phi: at least 2 mu w/ pt &gt; 2 GeV and eta &lt; 2.5



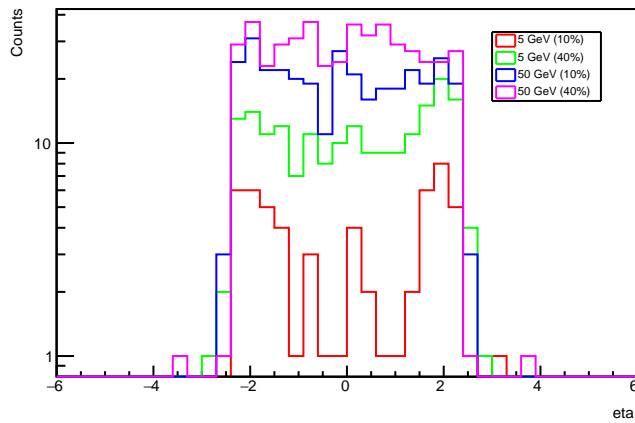
reco leading Mu pt: no cuts

reco leading Mu pt:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

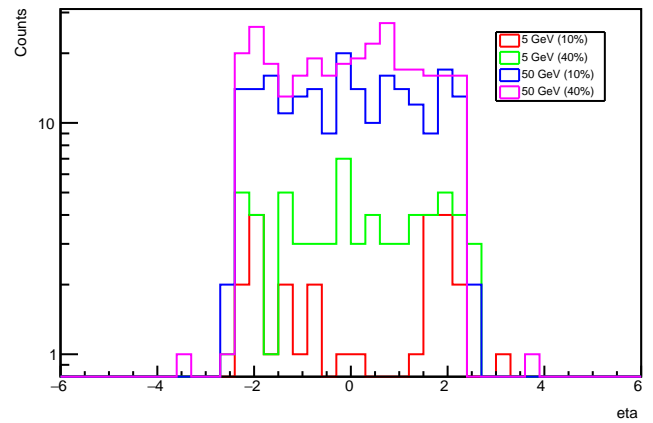
reco leading Mu pt: MET &gt; 120 GeV

reco leading Mu pt:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_{\text{T}} > 30$  GeVreco leading Mu pt: at least 2 mu w/  $p_{\text{T}} \geq 2$  GeV and  $|\eta| < 2.5$ 

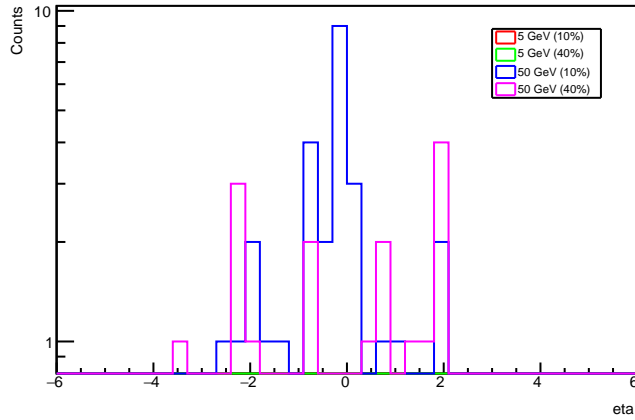
reco leading Mu eta: no cuts



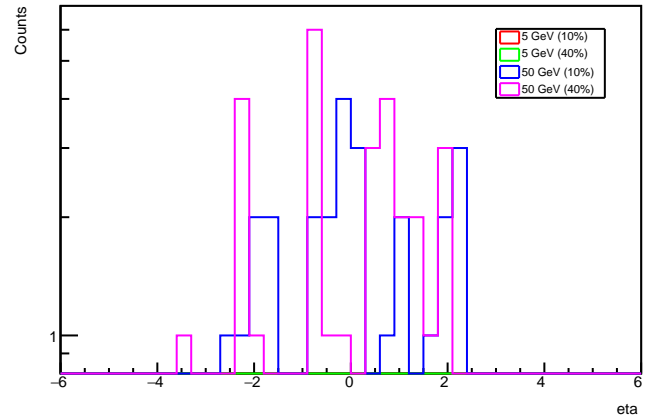
reco leading Mu eta:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV



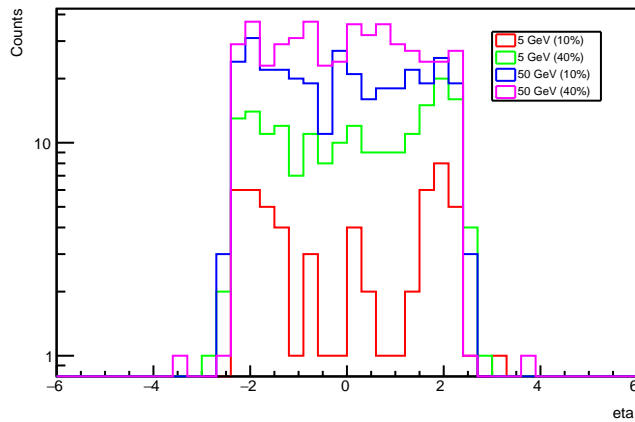
reco leading Mu eta: MET > 120 GeV



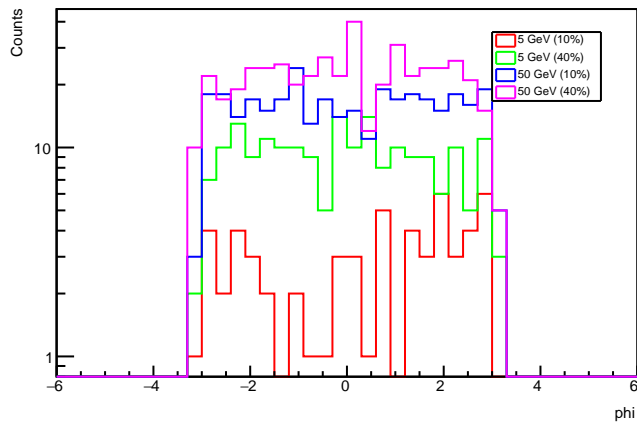
reco leading Mu eta:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeV



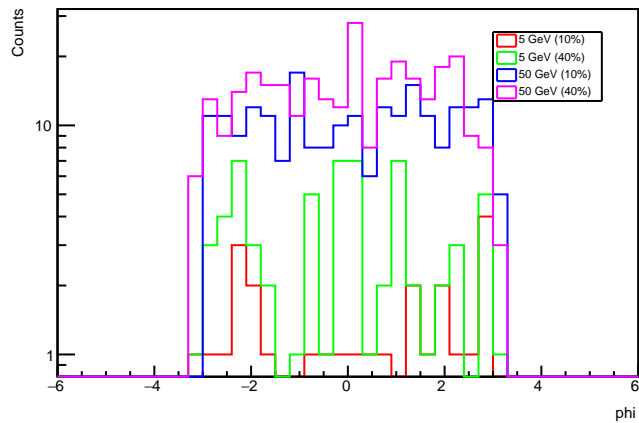
reco leading Mu eta: at least 2 mu w/  $p_t \geq 2$  GeV and  $\eta < 2.5$



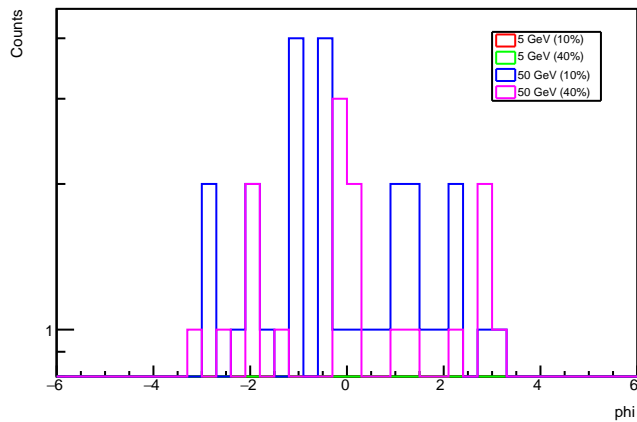
reco leading Mu phi: no cuts



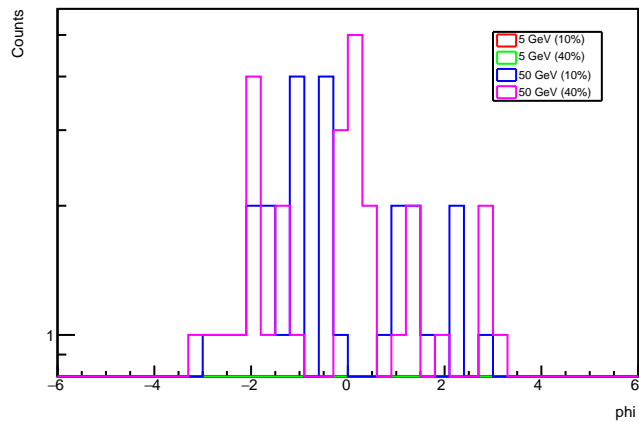
reco leading Mu phi: n\_jet &gt;=1, j1pt &gt; 30 GeV



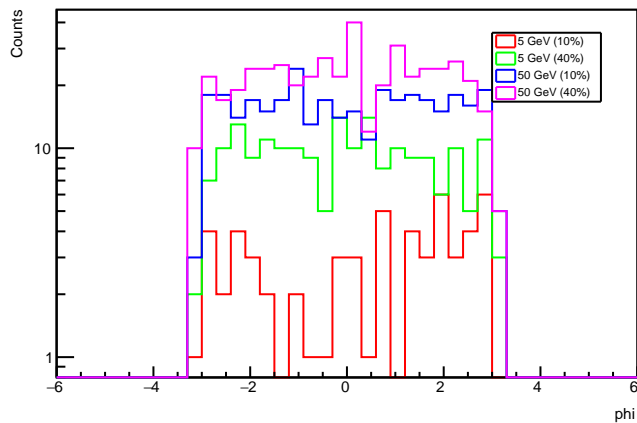
reco leading Mu phi: MET &gt; 120 GeV



reco leading Mu phi: j1pt &gt;120, at most 2 jets w/ pt &gt;30 GeV

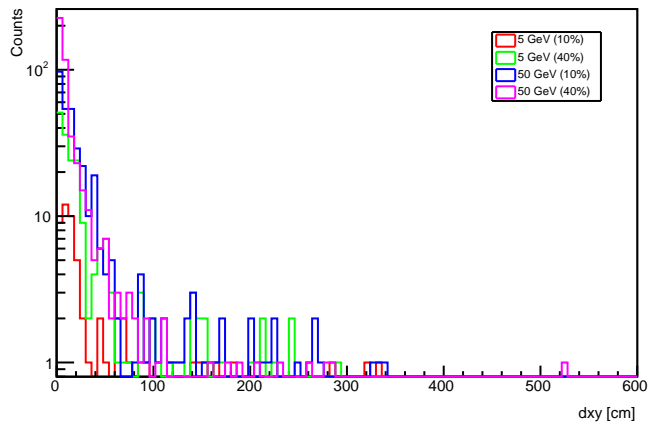
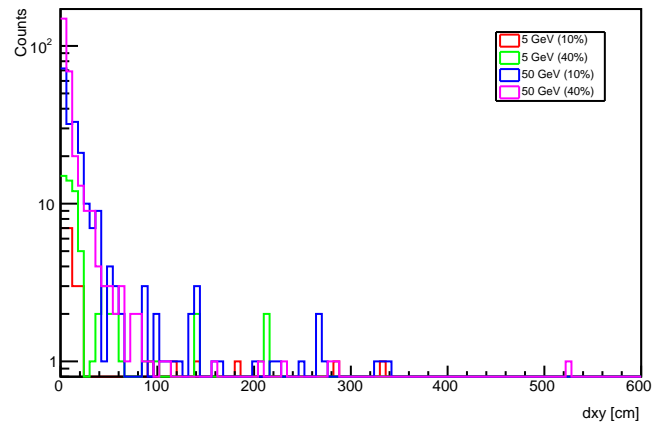


reco leading Mu phi: at least 2 mu w/ pt &gt; 2 GeV and eta &lt; 2.5

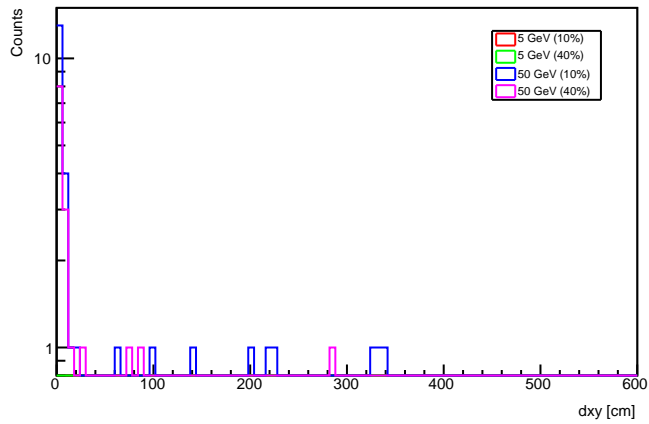
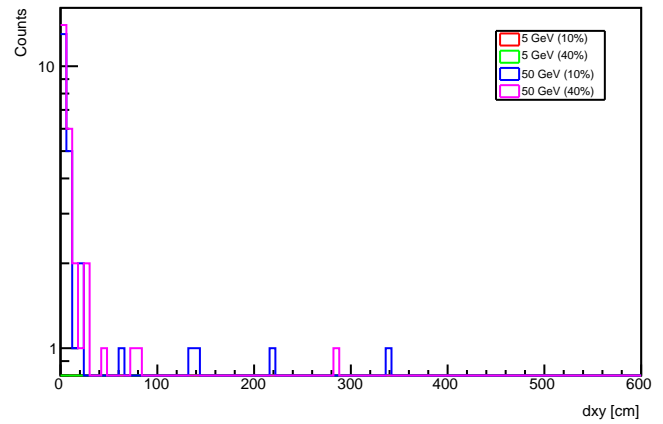
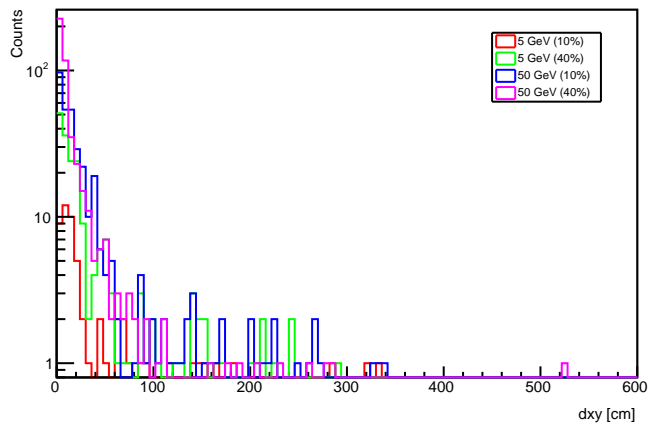




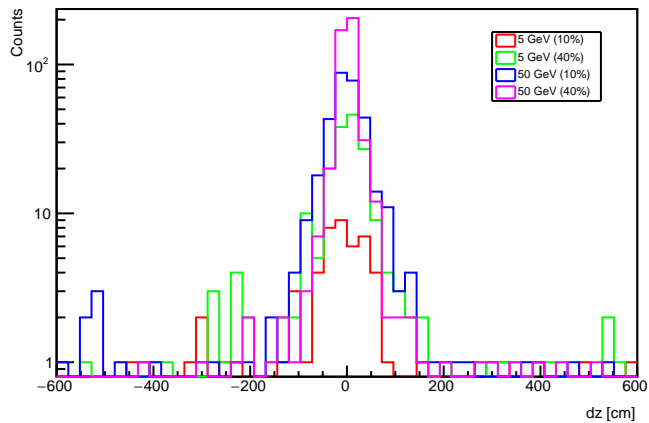
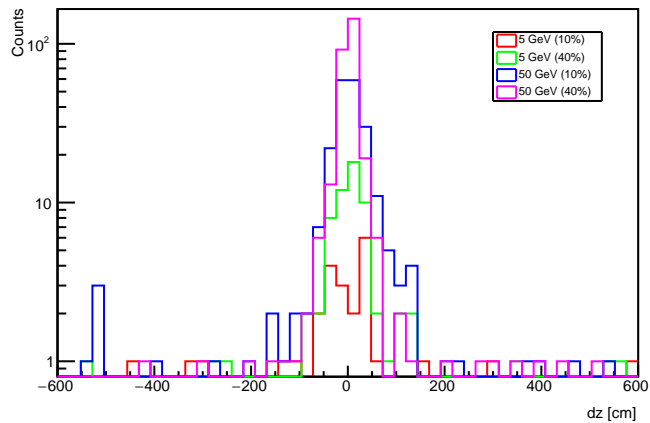
reco leading Mu vxy: no cuts

reco leading Mu vxy:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

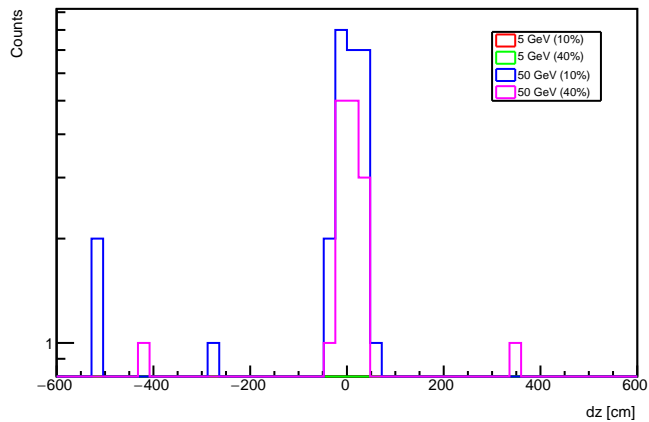
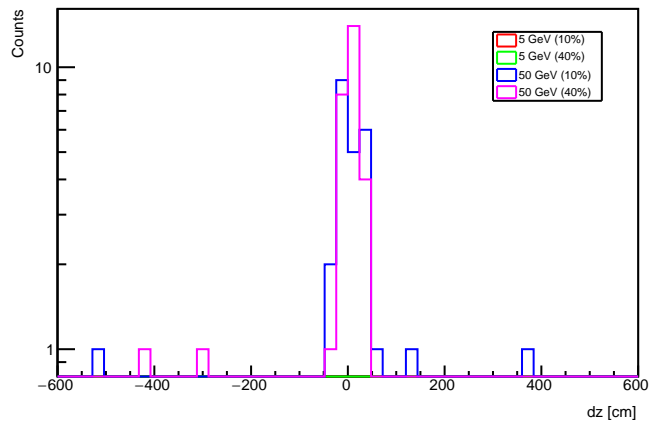
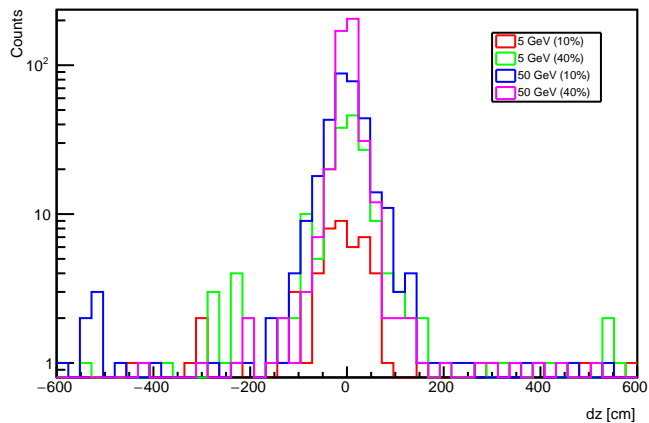
reco leading Mu vxy: MET &gt; 120 GeV

reco leading Mu vxy:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeVreco leading Mu vxy: at least 2 mu w/  $p_t \geq 2$  GeV and  $|\eta| < 2.5$ 

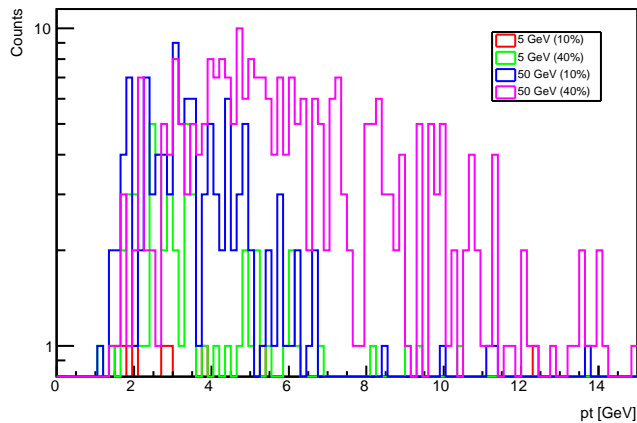
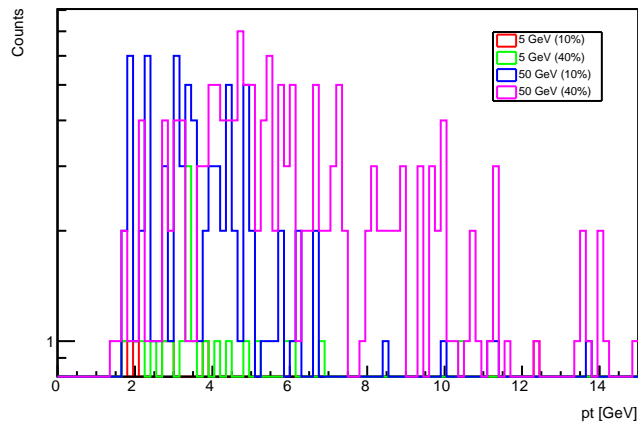
reco leading Mu vz: no cuts

reco leading Mu vz:  $n_{\text{jet}} \geq 1, j_{1\text{pt}} > 30 \text{ GeV}$ 

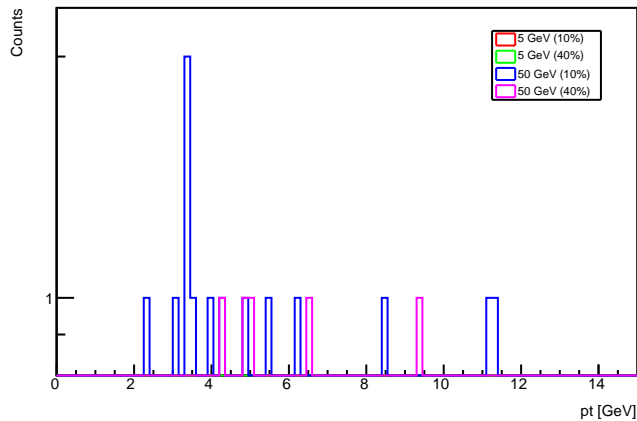
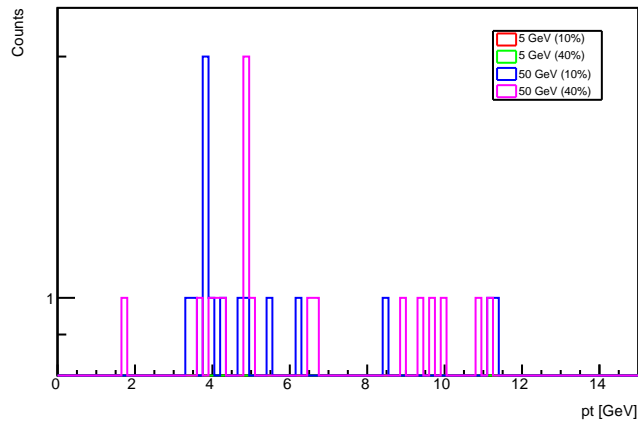
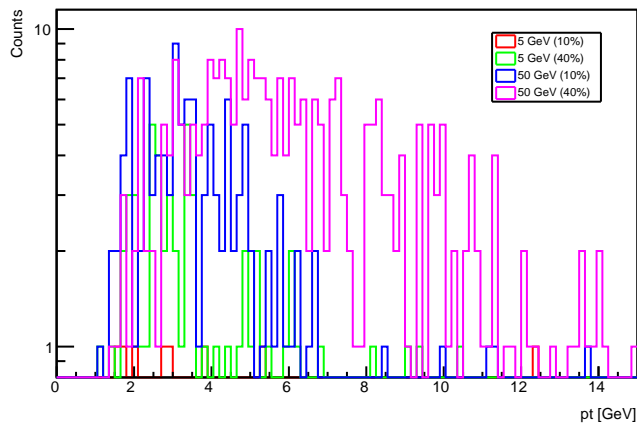
reco leading Mu vz: MET &gt; 120 GeV

reco leading Mu vz:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30 \text{ GeV}$ reco leading Mu vz: at least 2 mu w/  $p_t \geq 2 \text{ GeV}$  and  $\eta < 2.5$ 

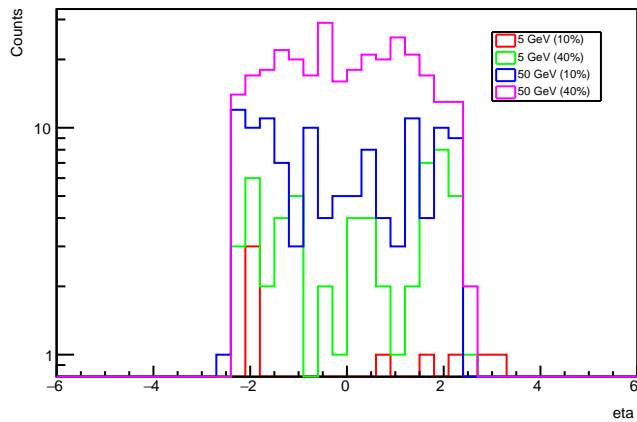
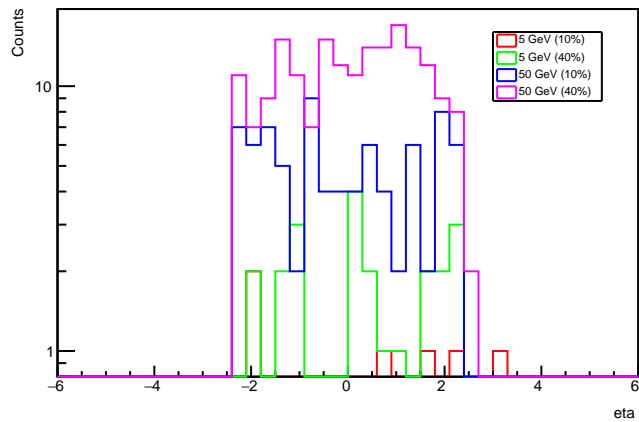
reco subleading Mu pt: no cuts

reco subleading Mu pt:  $n_{\text{jet}} \geq 1$ ,  $j1pt > 30$  GeV

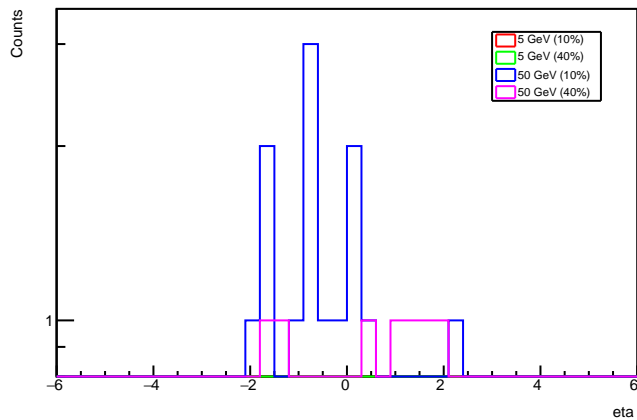
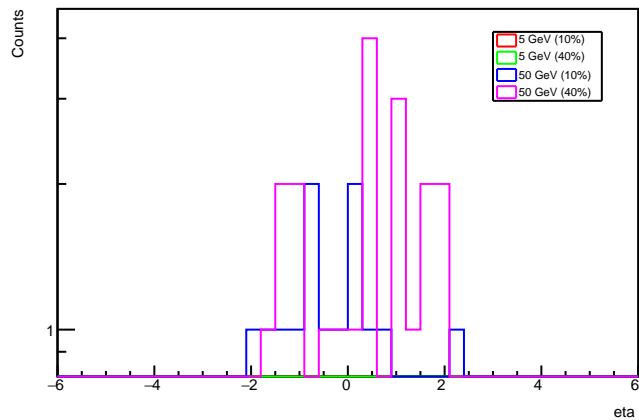
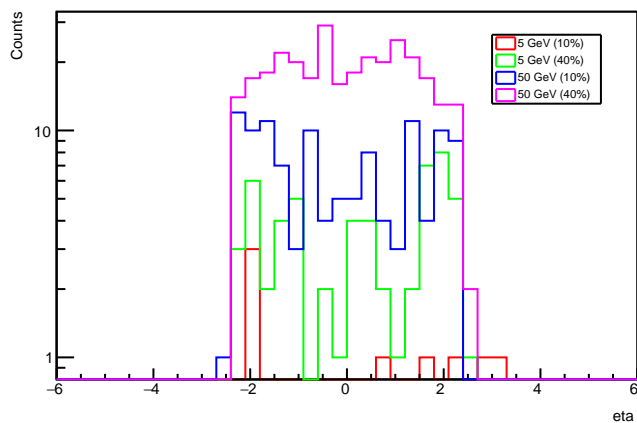
reco subleading Mu pt: MET &gt; 120 GeV

reco subleading Mu pt:  $j1pt > 120$ , at most 2 jets w/  $pt > 30$  GeVreco subleading Mu pt: at least 2 mu w/  $? 2$  GeV and  $\eta < 2.5$ 

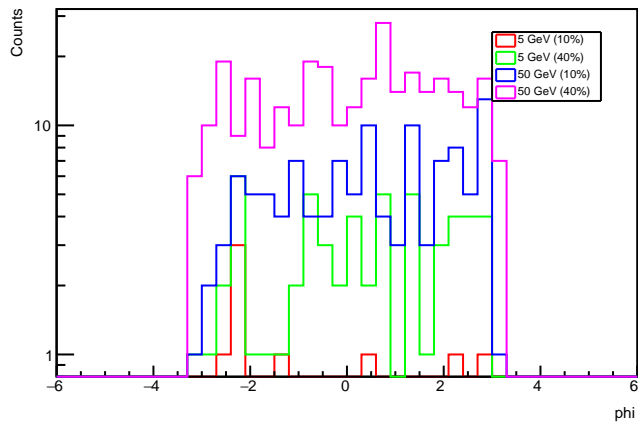
reco subleading Mu eta: no cuts

reco subleading Mu eta:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

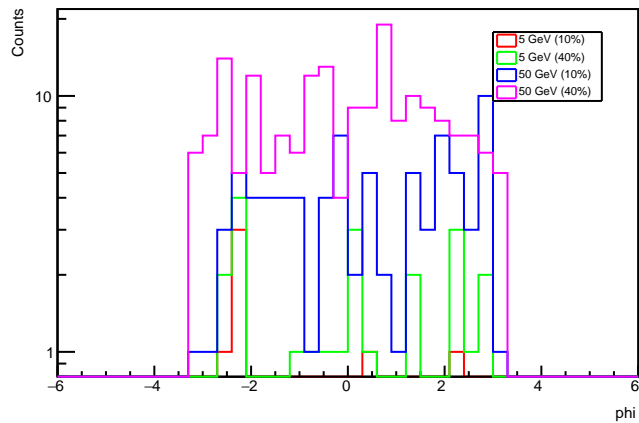
reco subleading Mu eta: MET &gt; 120 GeV

reco subleading Mu eta:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeVreco subleading Mu eta: at least 2 mu w/  $p_t > 2$  GeV and  $\eta < 2.5$ 

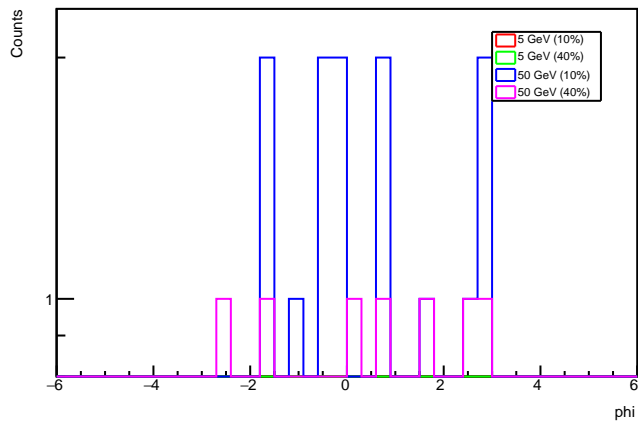
reco subleading Mu phi: no cuts



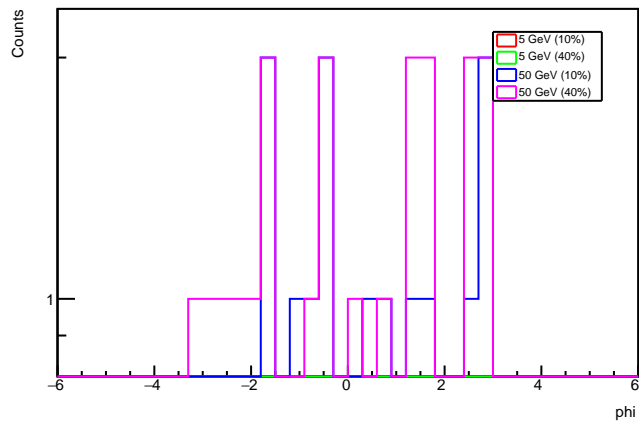
reco subleading Mu phi: n\_jet &gt;= 1, j1pt &gt; 30 GeV



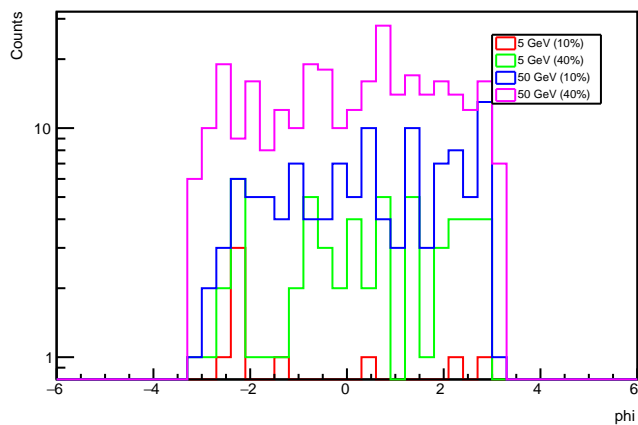
reco subleading Mu phi: MET &gt; 120 GeV



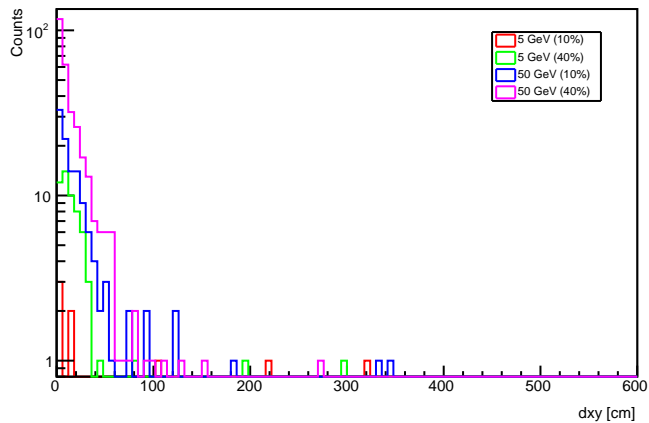
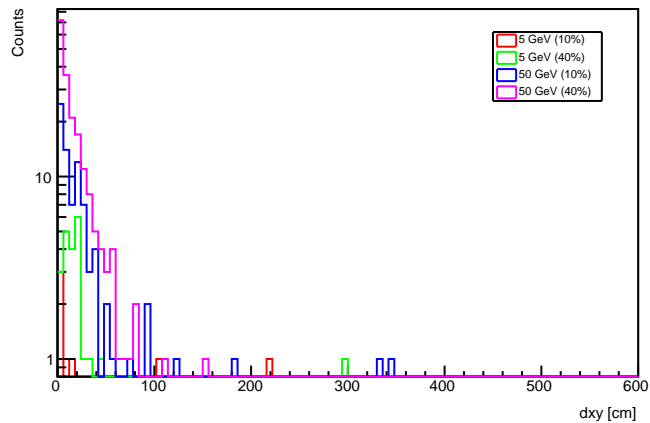
reco subleading Mu phi: j1pt &gt; 120, at most 2 jets w/ pt &gt; 30 GeV



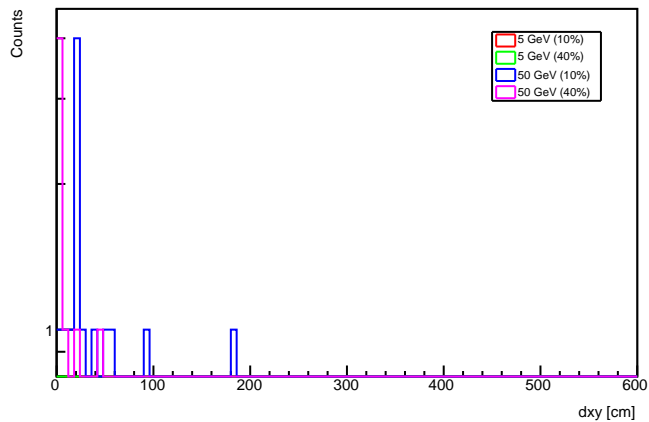
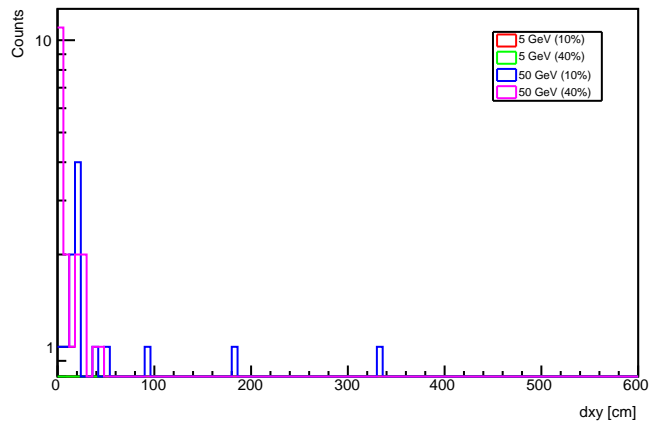
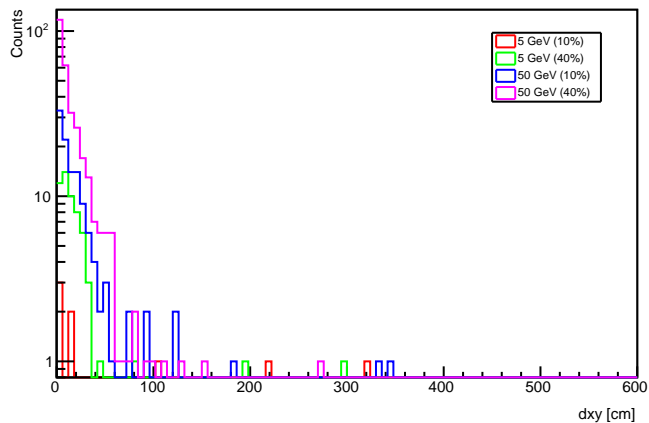
reco subleading Mu phi: at least 2 mu w/ pt &gt; 2 GeV and eta &lt; 2.5



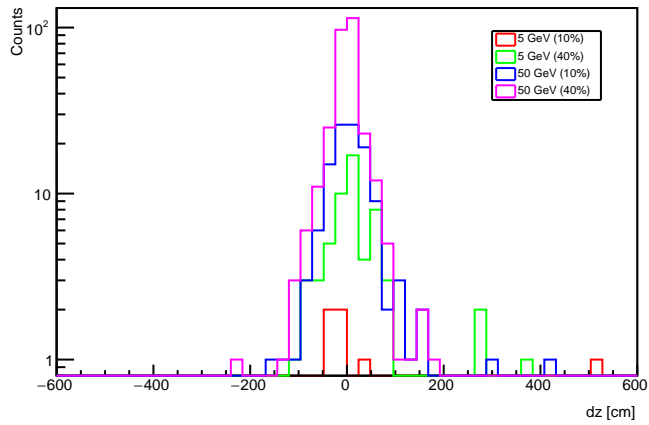
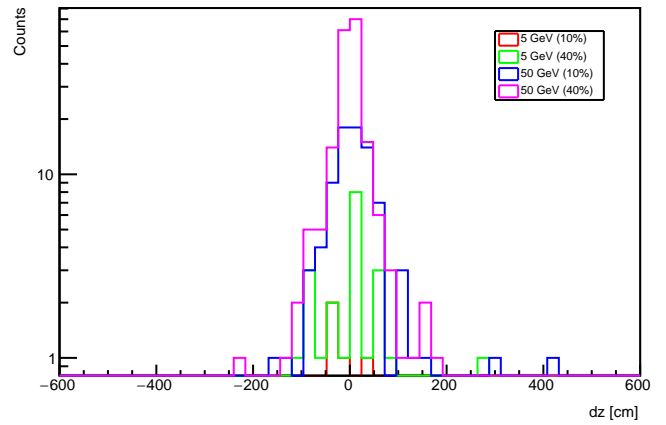
reco subleading Mu vxy: no cuts

reco subleading Mu vxy:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

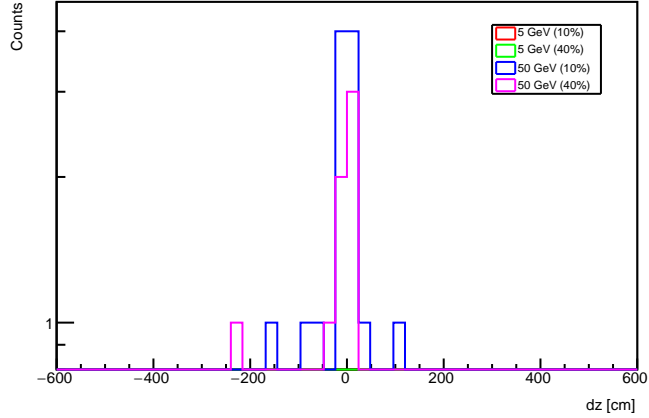
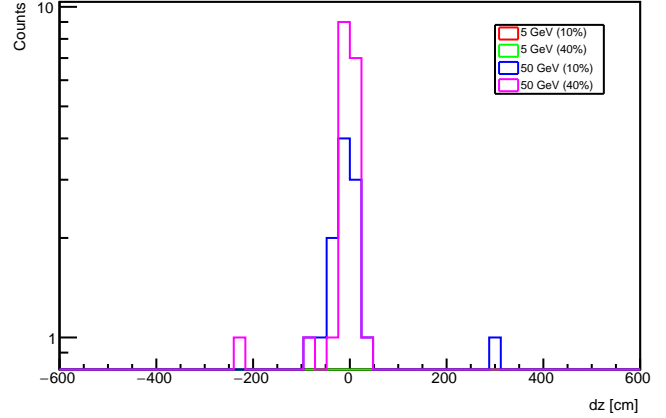
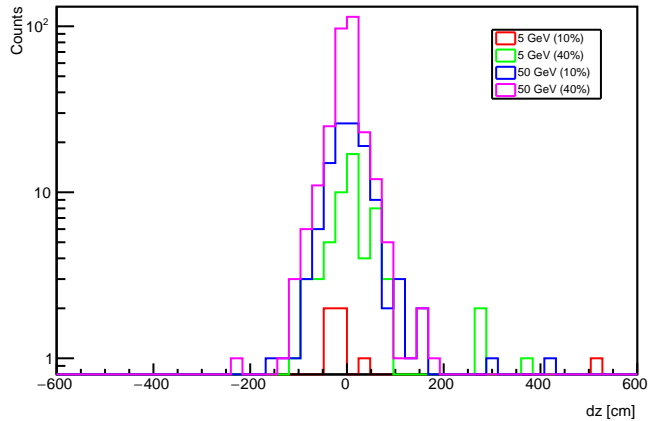
reco subleading Mu vxy: MET &gt; 120 GeV

reco subleading Mu vxy:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeVreco subleading Mu vxy: at least 2 mu w/  $p_t \geq 2$  GeV and  $|\eta| < 2.5$ 

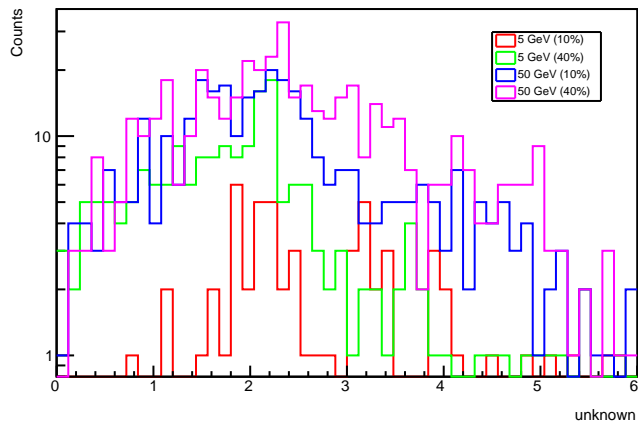
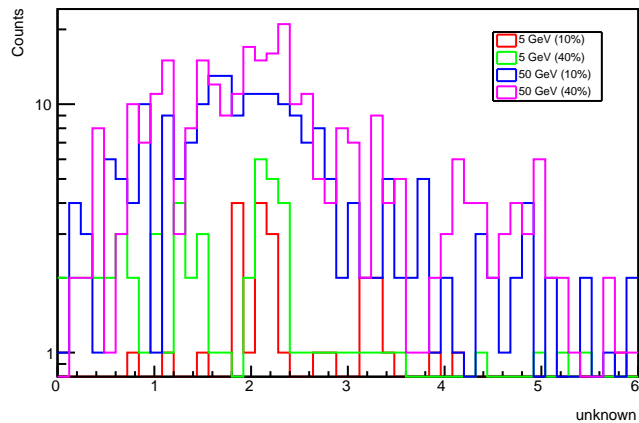
reco subleading Mu vz: no cuts

reco subleading Mu vz:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

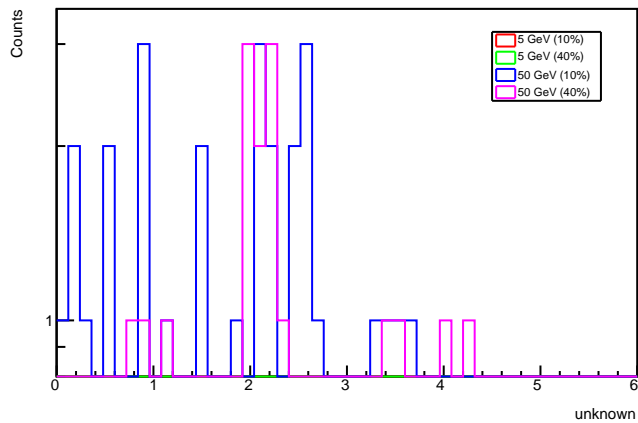
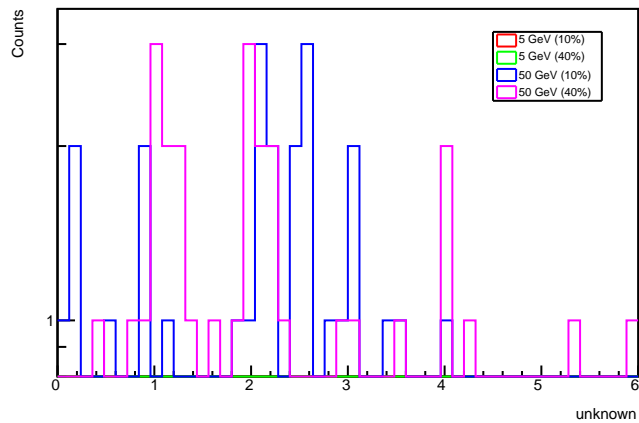
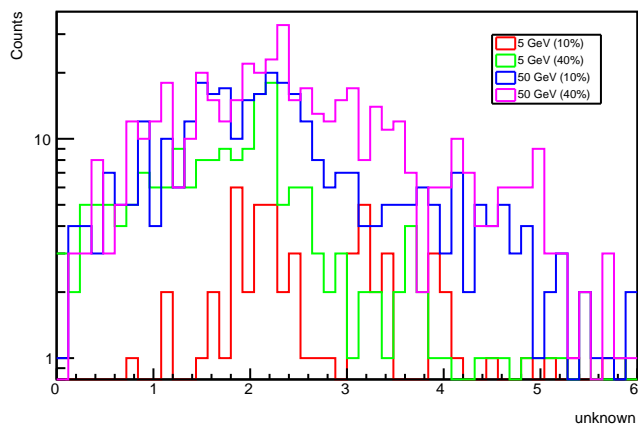
reco subleading Mu vz: MET &gt; 120 GeV

reco subleading Mu vz:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeVreco subleading Mu vz: at least 2 mu w/  $p_t > 2$  GeV and  $\eta < 2.5$ 

dR: reco leading mu and subleading mu: no cuts

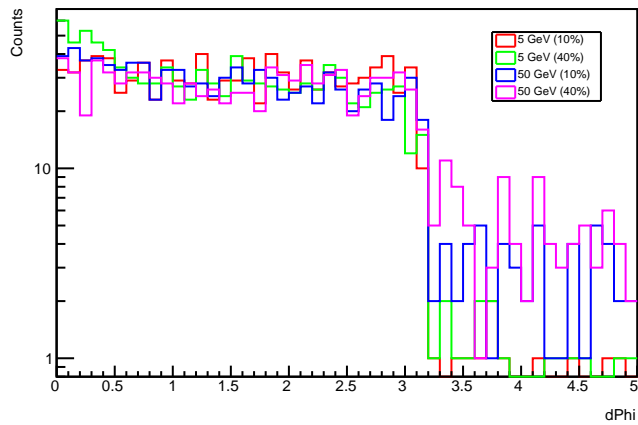
dR: reco leading mu and subleading mu:  $n_{\text{jet}} \geq 1$ ,  $j1_{\text{pt}} > 30$  GeV

dR: reco leading mu and subleading mu: MET &gt; 120 GeV

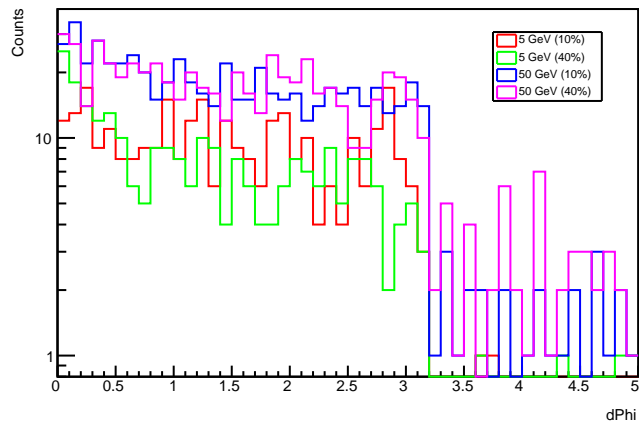
dR: reco leading mu and subleading mu:  $j1_{\text{pt}} > 120$ , at most 2 jets w/  $p_{\text{T}} > 30$  GeVdR: reco leading mu and subleading mu: at least 2 mu w/  $p_{\text{T}} \geq 2$  GeV and  $\eta < 2.5$ 



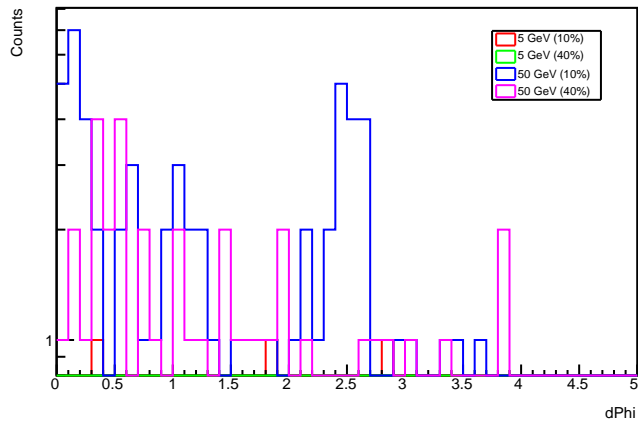
dPhi: reco MET and leading mu: no cuts



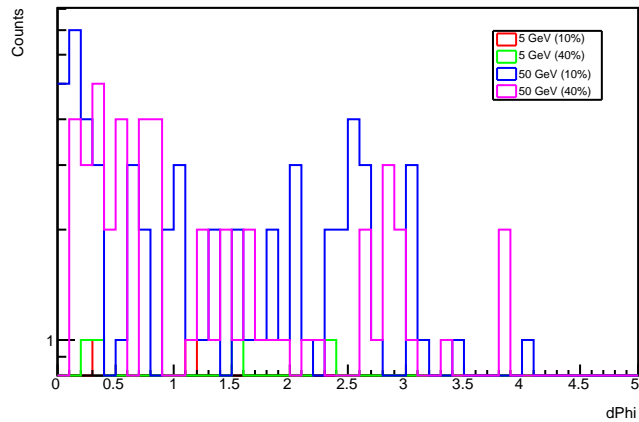
dPhi: reco MET and leading mu:  $n_{\text{jet}} \geq 1, j_{1\text{pt}} > 30 \text{ GeV}$



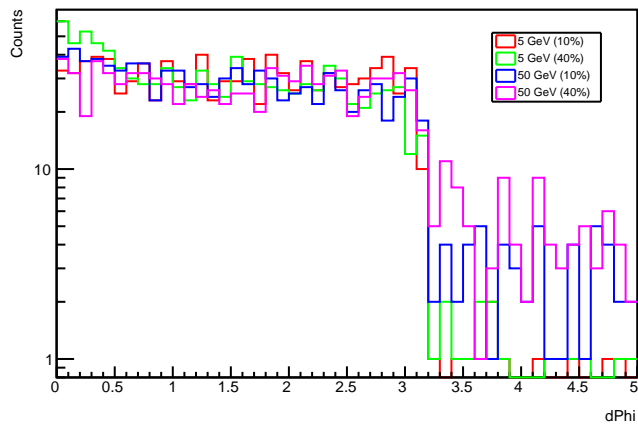
dPhi: reco MET and leading mu: MET > 120 GeV



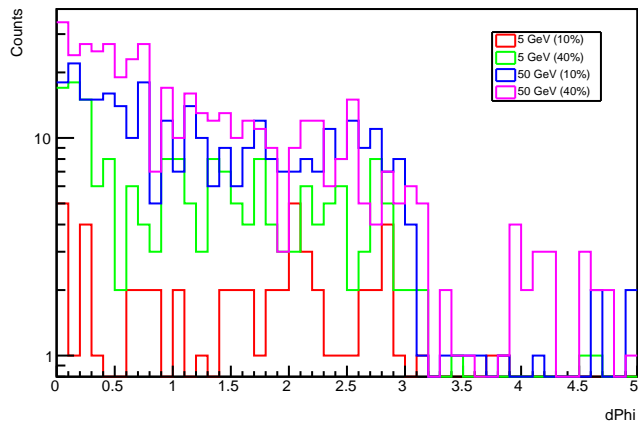
dPhi: reco MET and leading mu:  $j_{1\text{pt}} > 120, \text{ at most 2 jets w/ } p_t > 30 \text{ GeV}$



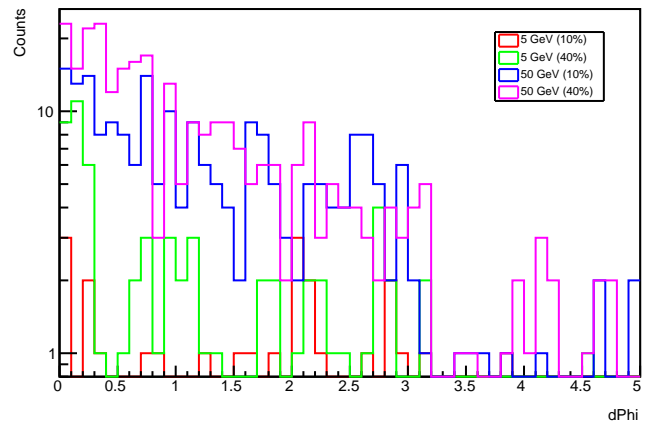
dPhi: reco MET and leading mu: at least 2 mu w/  $p_t \geq 2 \text{ GeV}$  and  $\eta < 2.5$



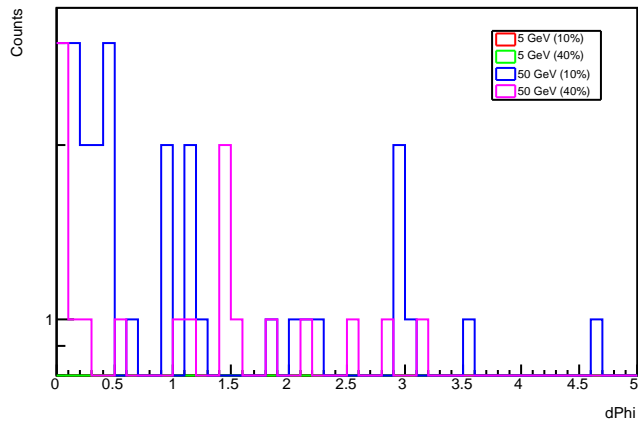
dPhi: reco leading mu and subleading mu: no cuts



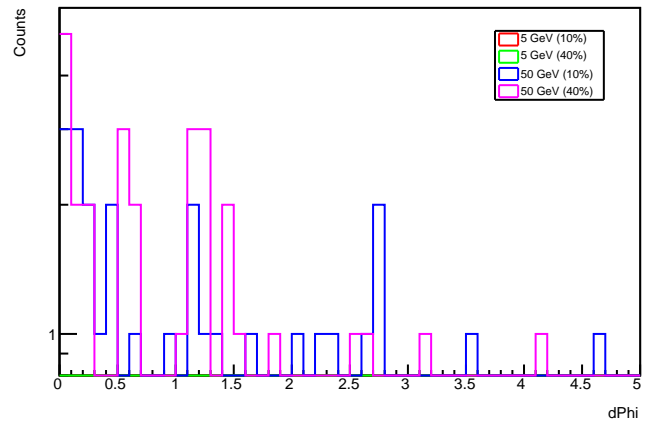
dPhi: reco leading mu and subleading mu:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV



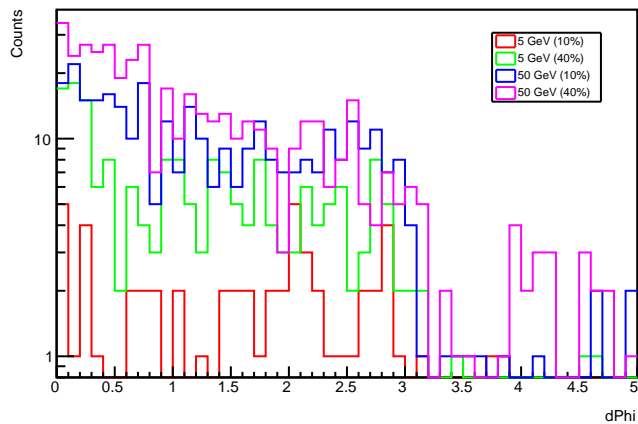
dPhi: reco leading mu and subleading mu: MET > 120 GeV



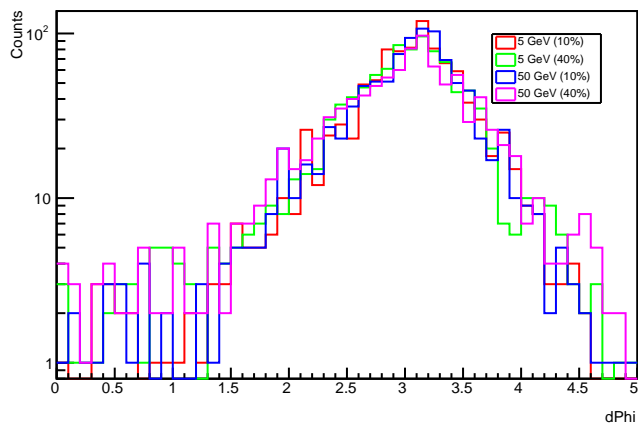
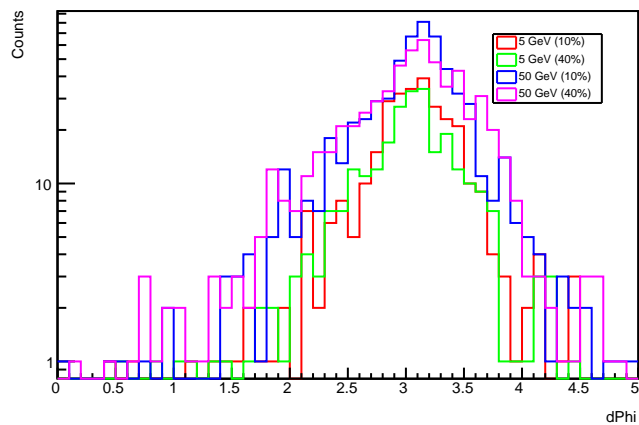
dPhi: reco leading mu and subleading mu:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_{\text{T}} > 30$  GeV



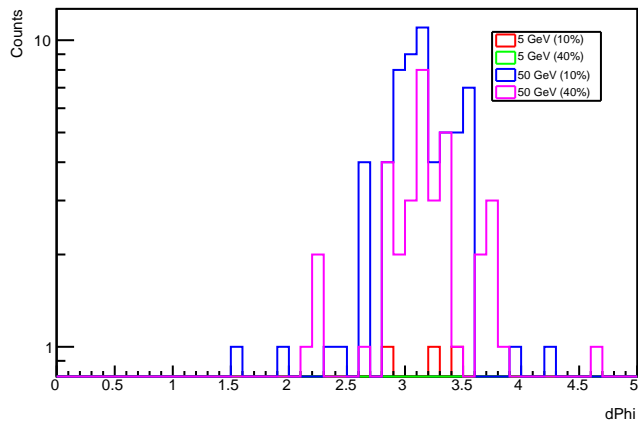
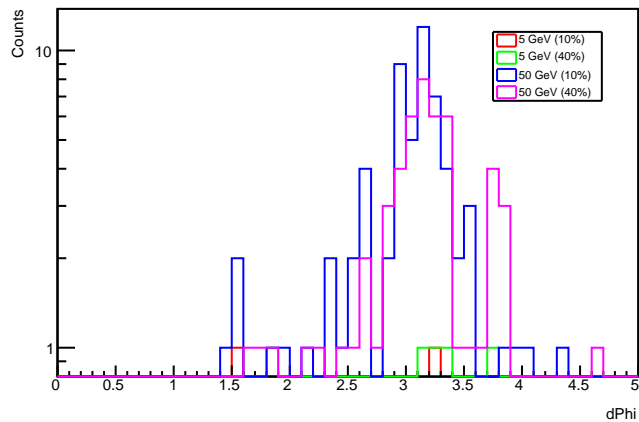
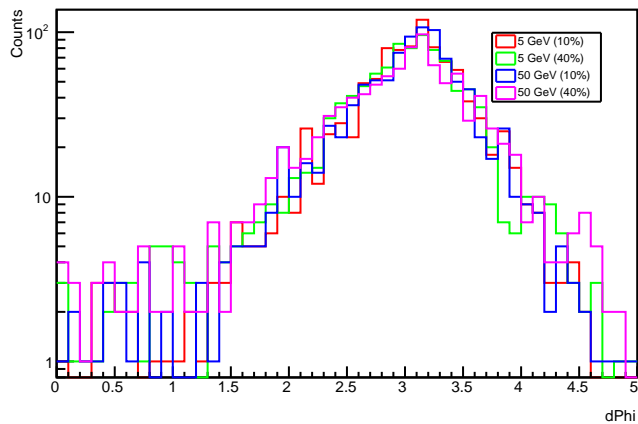
dPhi: reco leading mu and subleading mu: at least 2 mu w/  $p_{\text{T}} \geq 2$  GeV and  $|\eta| < 2.5$



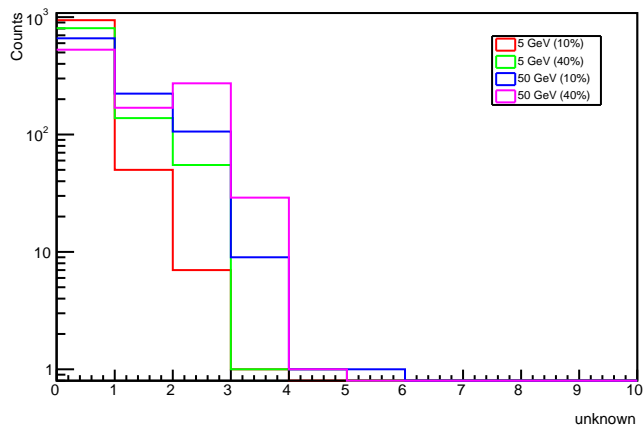
dPhi: reco MET and leading jet: no cuts

dPhi: reco MET and leading jet:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV

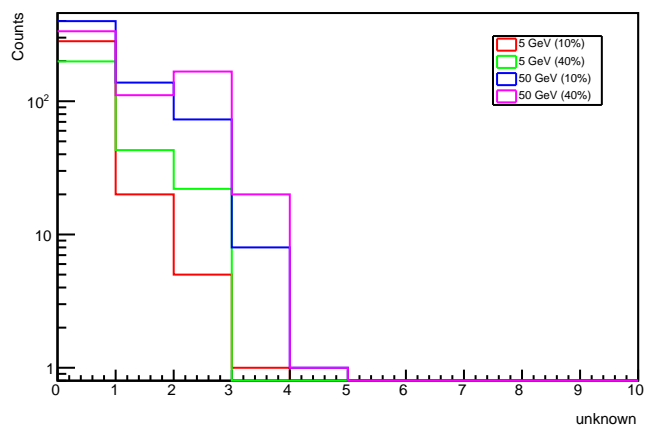
dPhi: reco MET and leading jet: MET &gt; 120 GeV

dPhi: reco MET and leading jet:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeVdPhi: reco MET and leading jet: at least 2 mu w/  $p_t \geq 2$  GeV and  $\eta < 2.5$ 

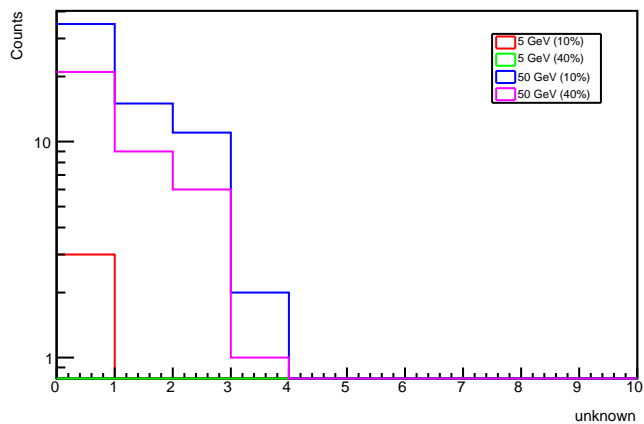
reco number of jets: no cuts



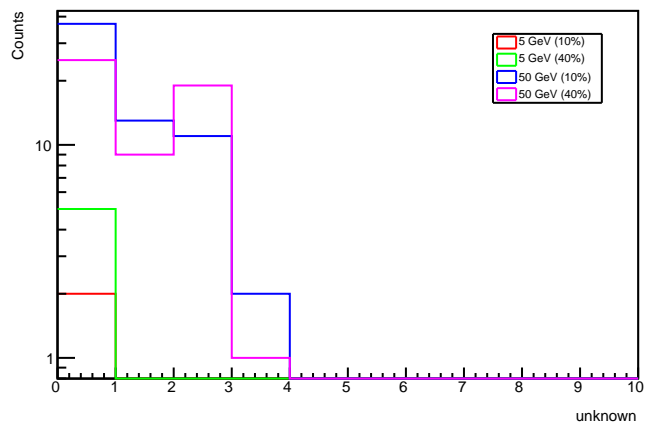
reco number of jets:  $n_{\text{jet}} \geq 1$ ,  $j_{1\text{pt}} > 30$  GeV



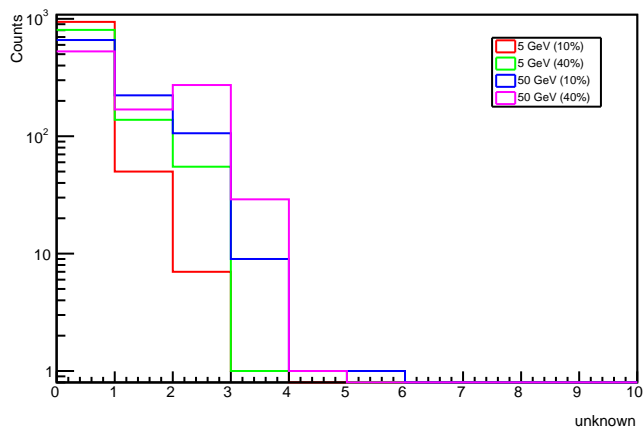
reco number of jets:  $\text{MET} > 120$  GeV



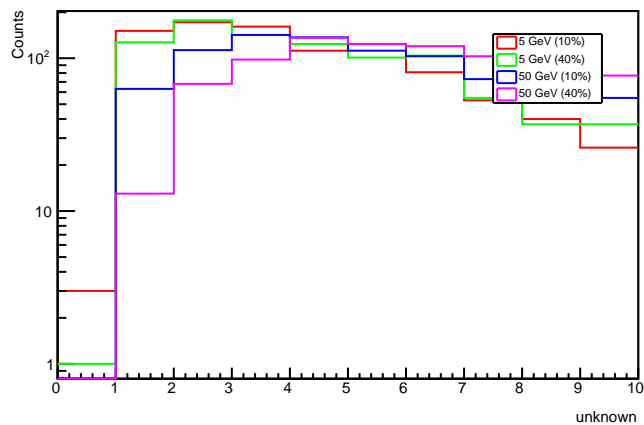
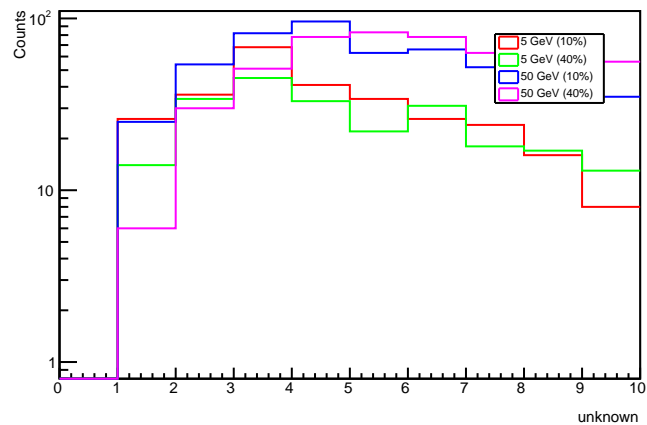
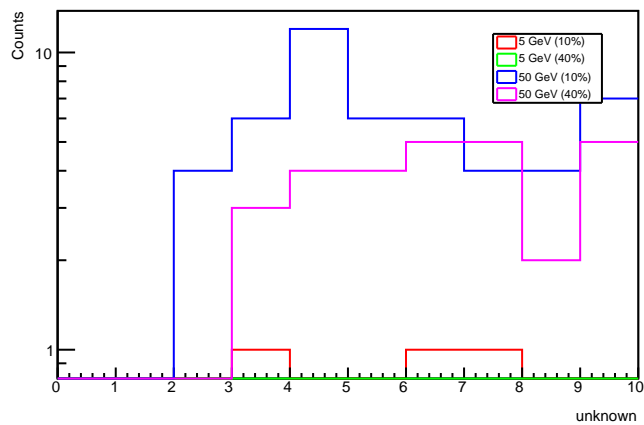
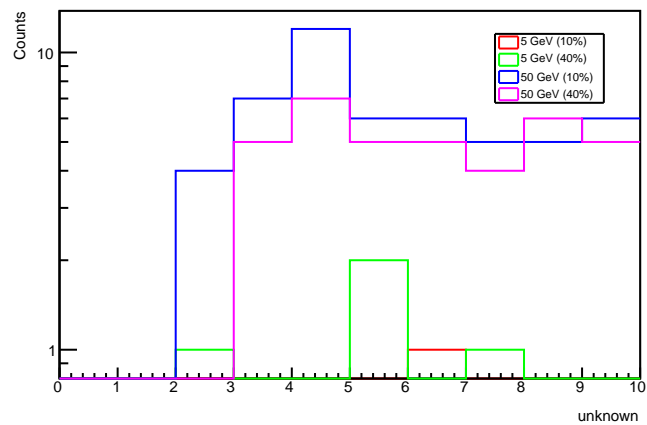
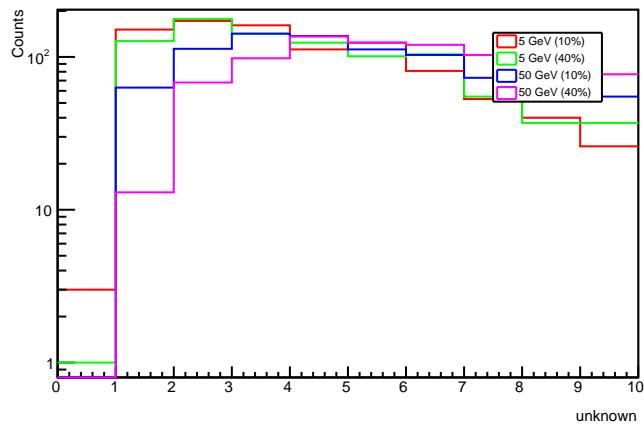
reco number of jets:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $\text{pt} > 30$  GeV



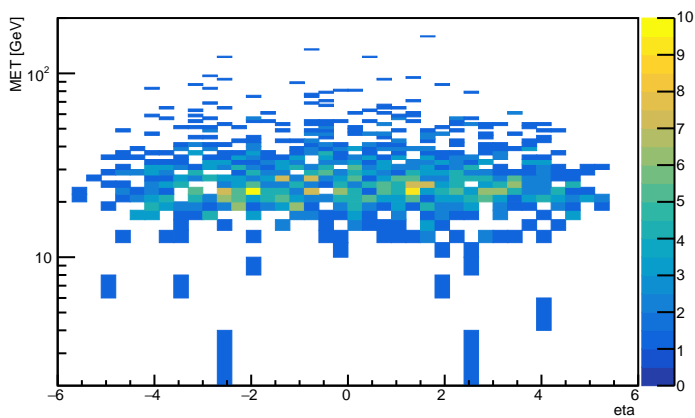
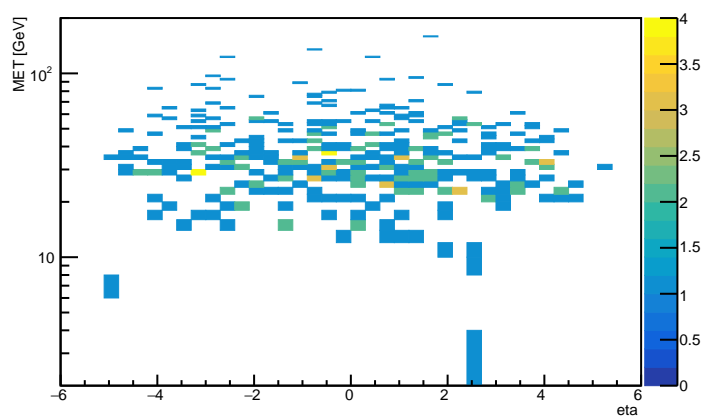
reco number of jets: at least 2 mu w/  $\text{pt} \geq 2$  GeV and  $|\eta| < 2.5$



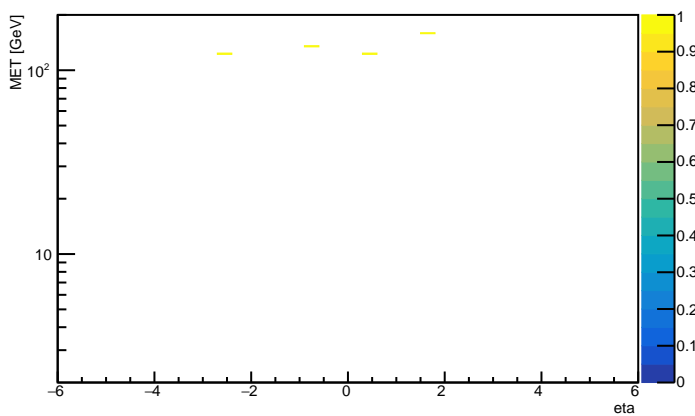
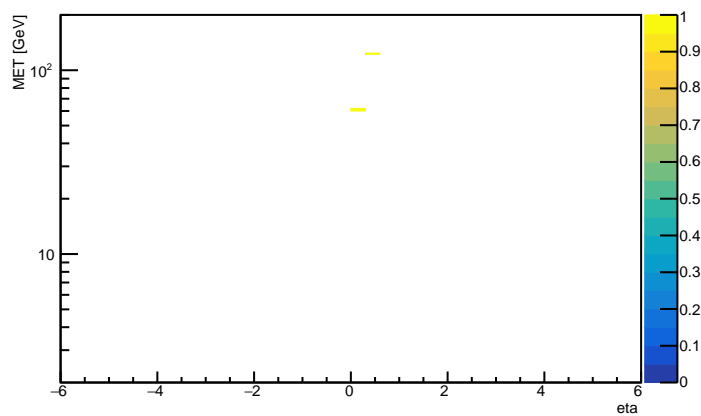
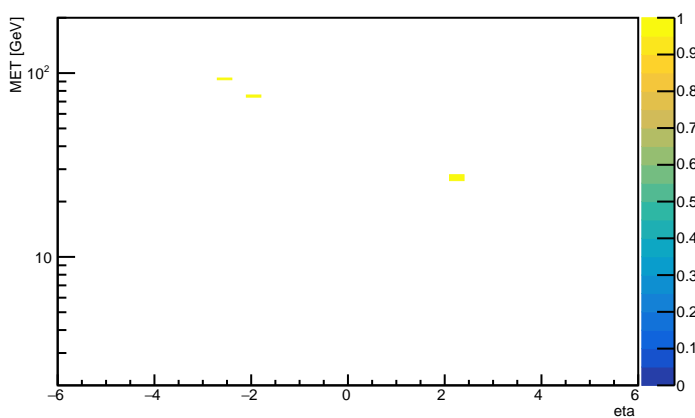
reco number of mu: no cuts

reco number of mu:  $n_{\text{jet}} \geq 1, j_{1\text{pt}} > 30 \text{ GeV}$ reco number of mu:  $\text{MET} > 120 \text{ GeV}$ reco number of mu:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30 \text{ GeV}$ reco number of mu: at least 2 mu w/  $p_t \geq 2 \text{ GeV}$  and  $\text{eta} < 2.5$ 

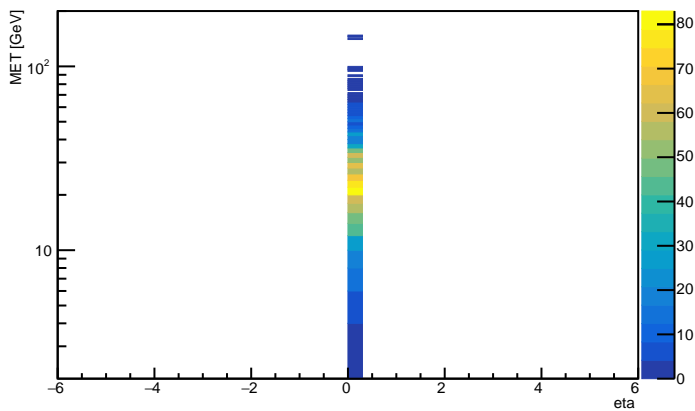
5p25\_dMchi-0p5\_ ctau 1cm gen leading Met eta vs pt: no cuts

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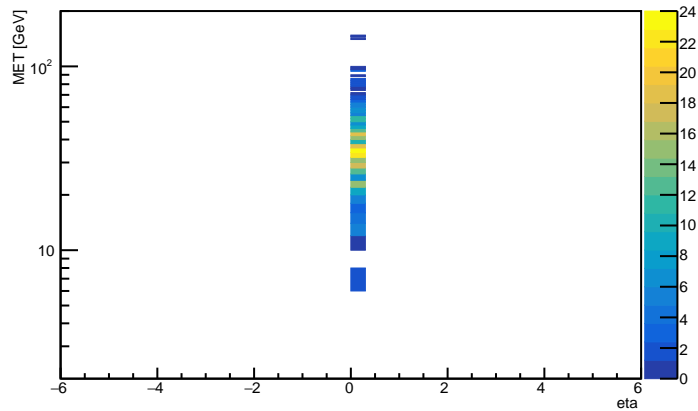
5p25\_dMchi-0p5\_ ctau 1cm gen leading Met eta vs pt: MET &gt; 120 GeV

5p25\_dMchi-0p5\_ ctau 1cm gen leading Met eta vs pt:  $j_{1\text{pt}} > 120$ , at most 2 jets w/  $p_t > 30$  GeV5p25\_dMchi-0p5\_ ctau 1cm gen leading Met eta vs pt: at least 2 mu w/  $p_t \geq 2$  GeV and  $|\eta| < 2.5$ 

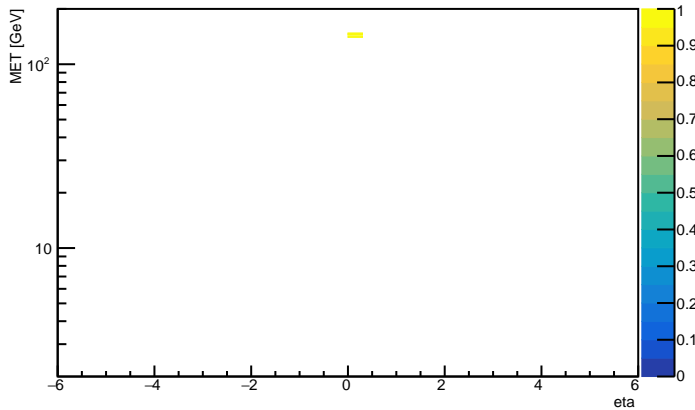
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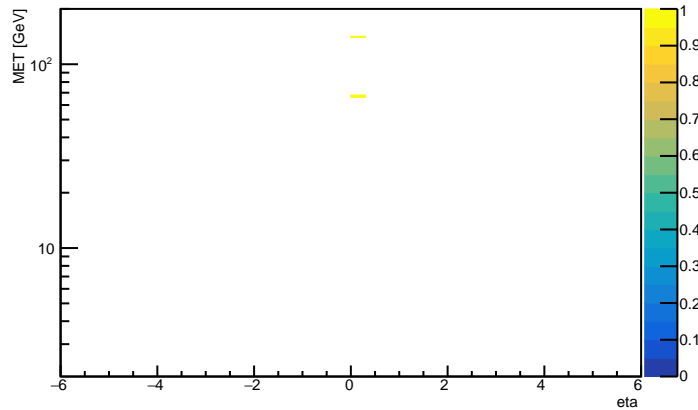
5p25\_dMchi-0p5\_ ctau 1cm reco leading Met eta vs pt: n\_jet &gt;=1, j1pt &gt; 30 GeV



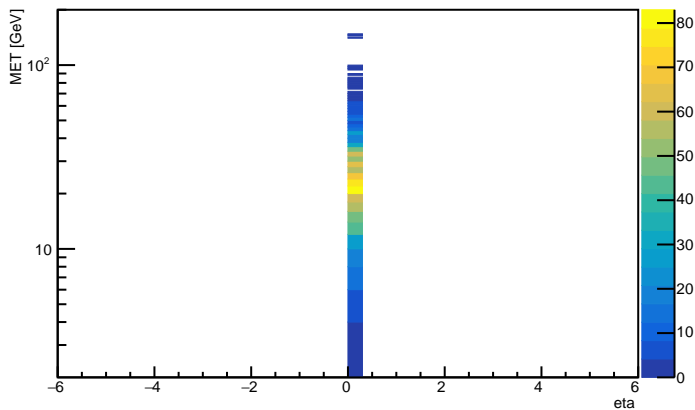
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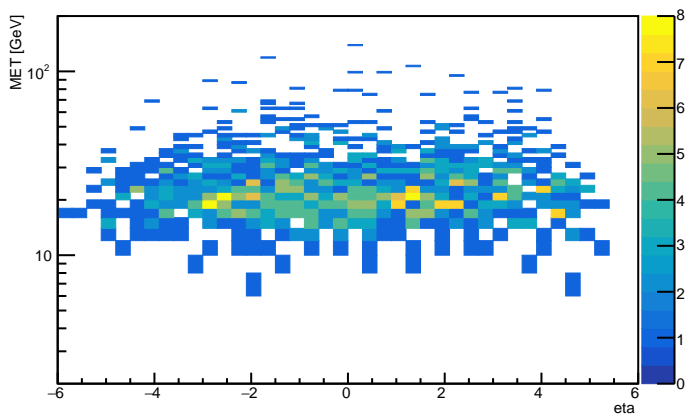
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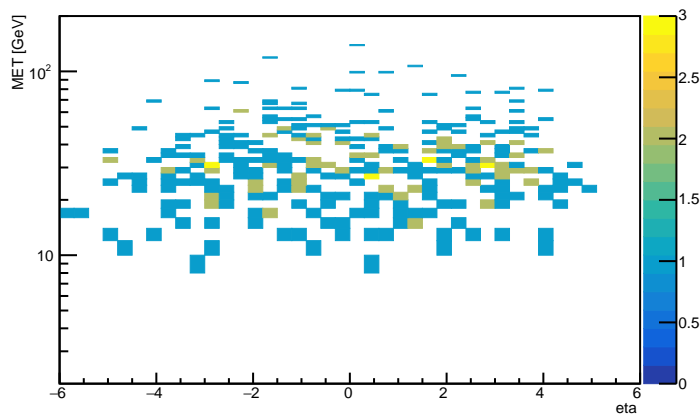
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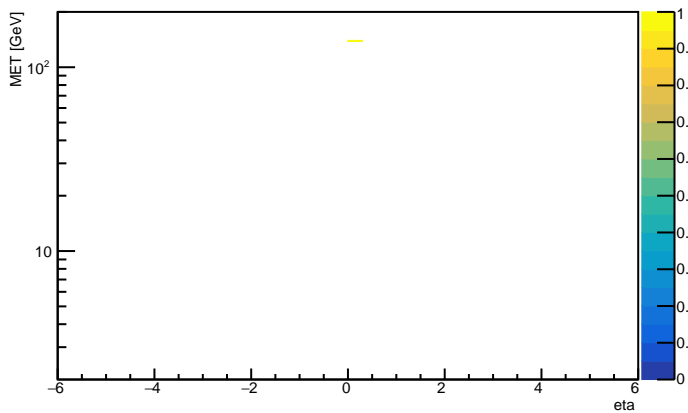
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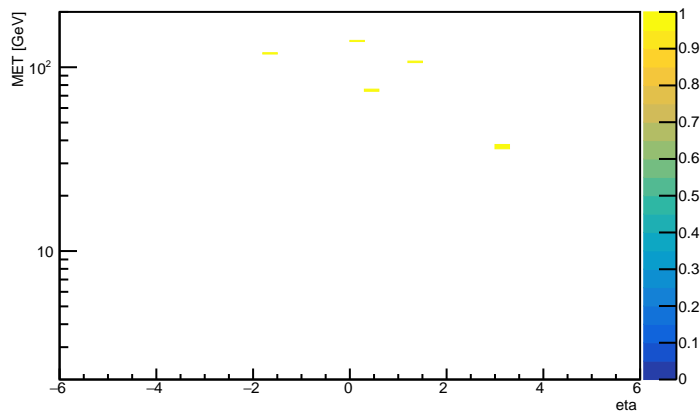
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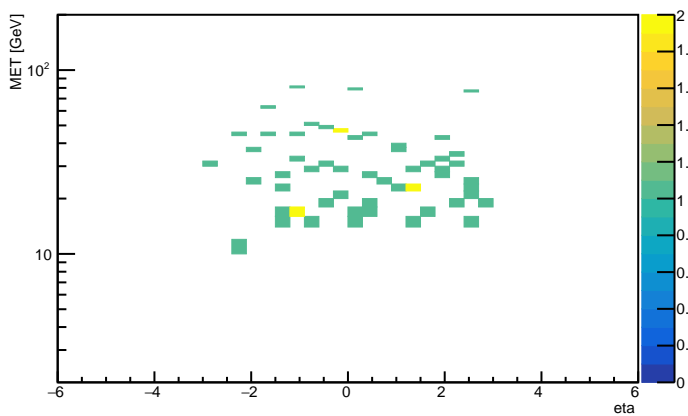
6p0\_dMchi-2p0\_ ctau 1cm gen leading Met eta vs pt: MET &gt; 120 GeV



6p0\_dMchi-2p0\_ ctau 1cm gen leading Met eta vs pt: j1 pt &gt;120, at most 2 jets w/ pt &gt;30 GeV

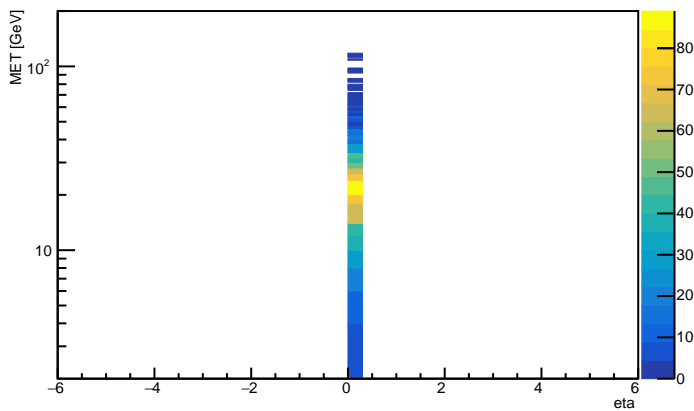


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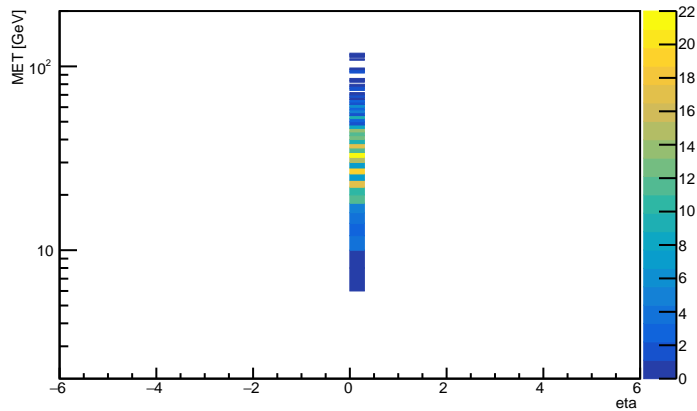




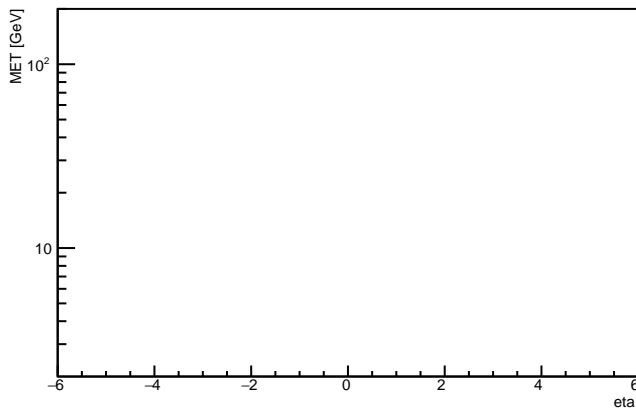
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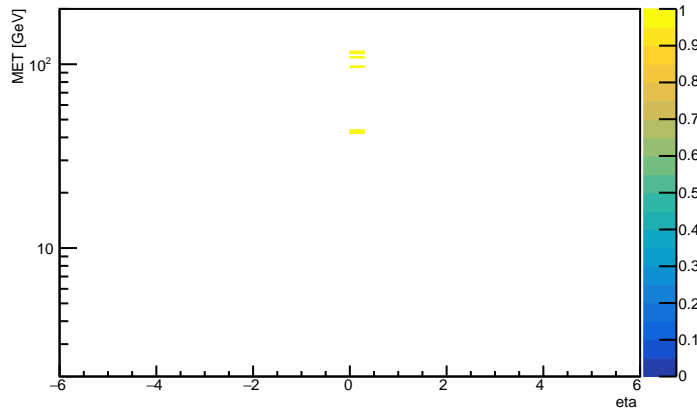
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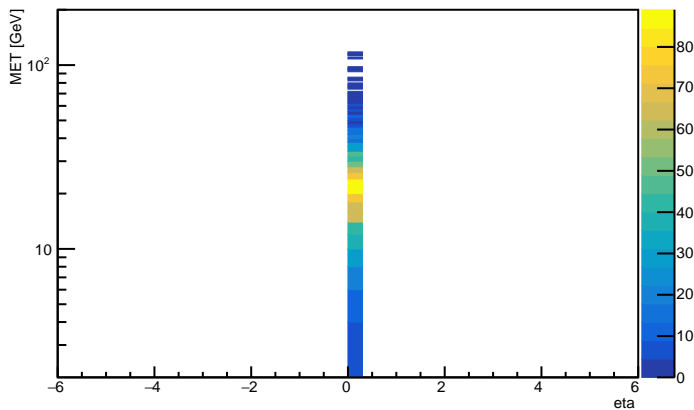
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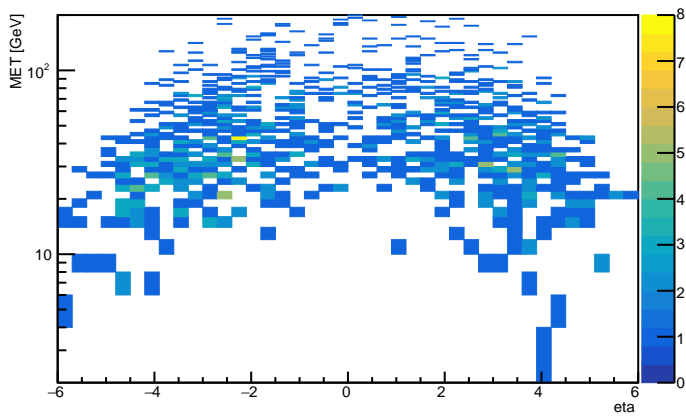
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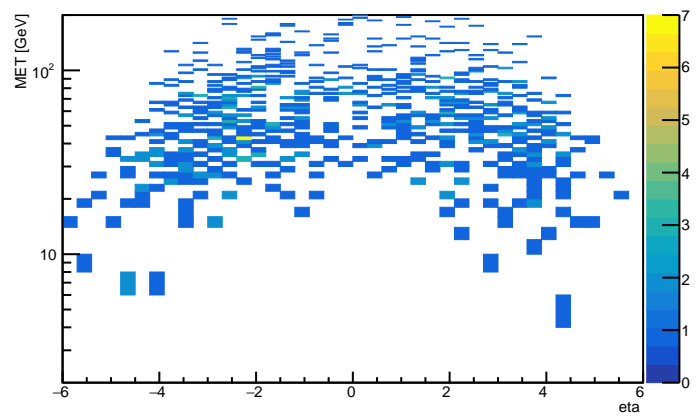
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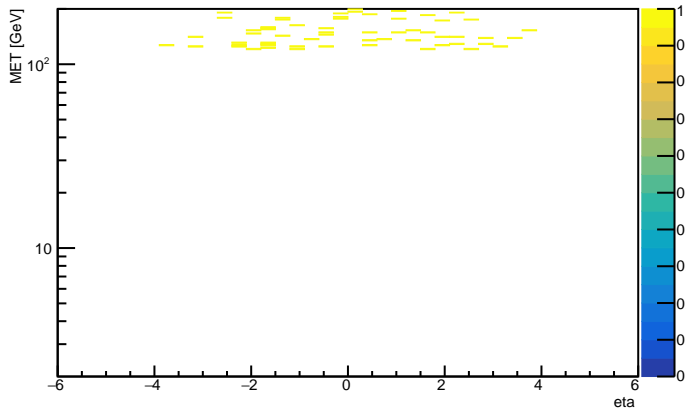
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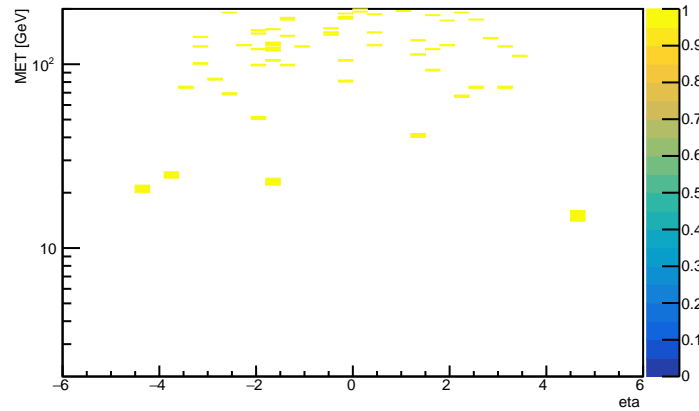
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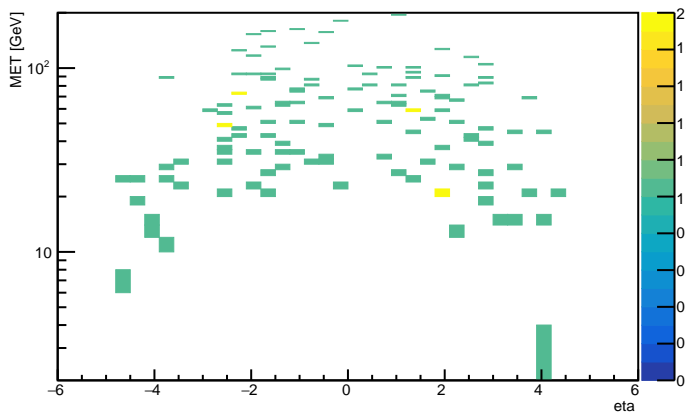
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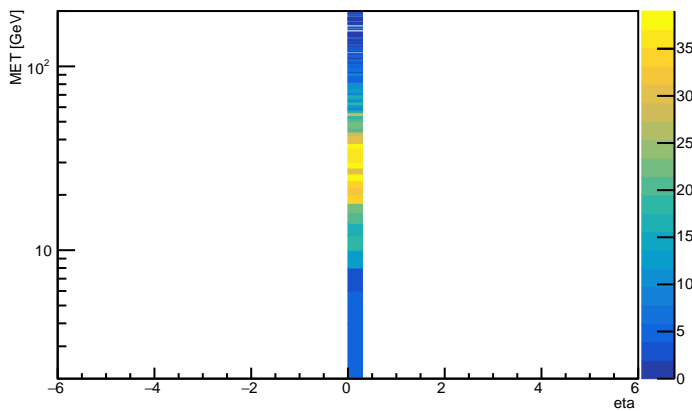
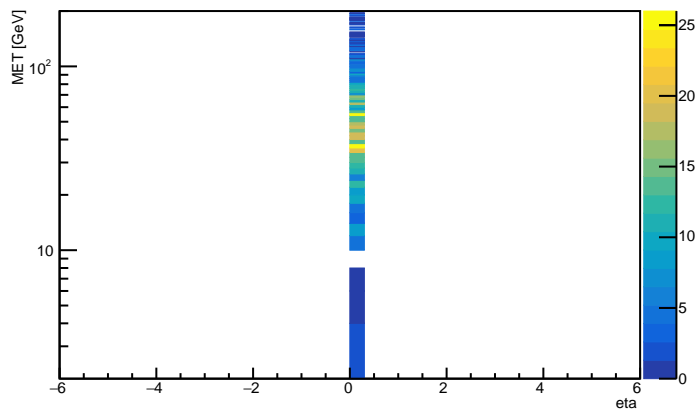
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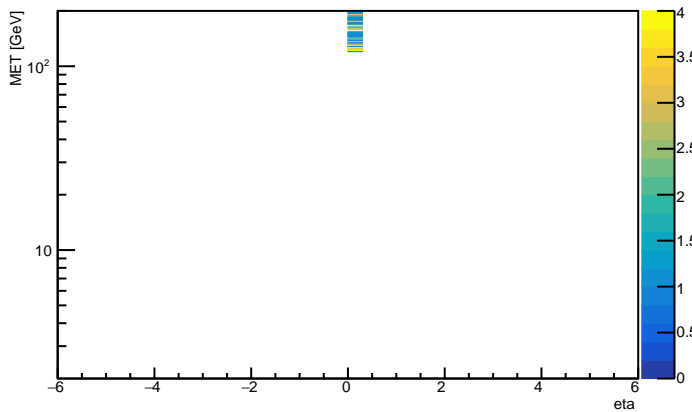
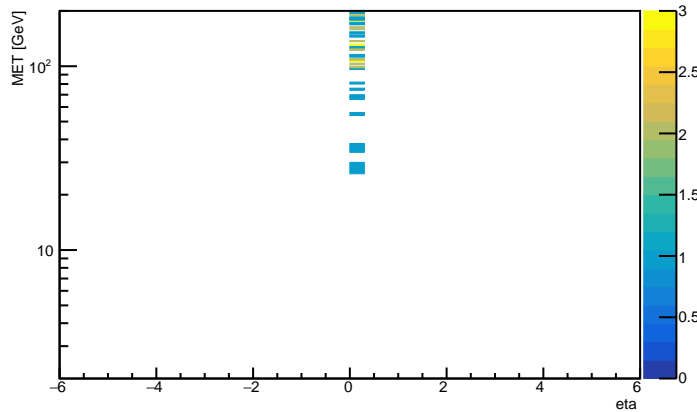
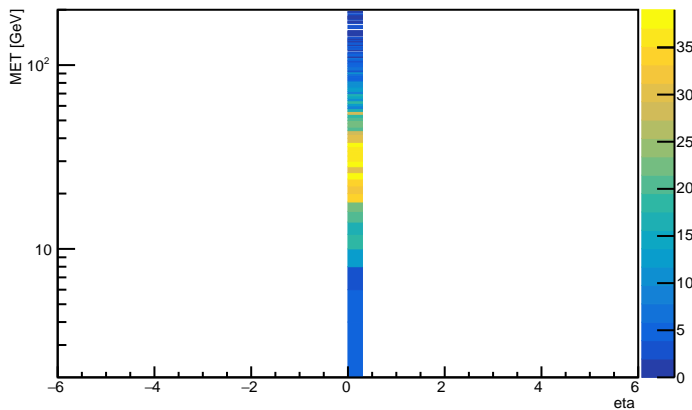
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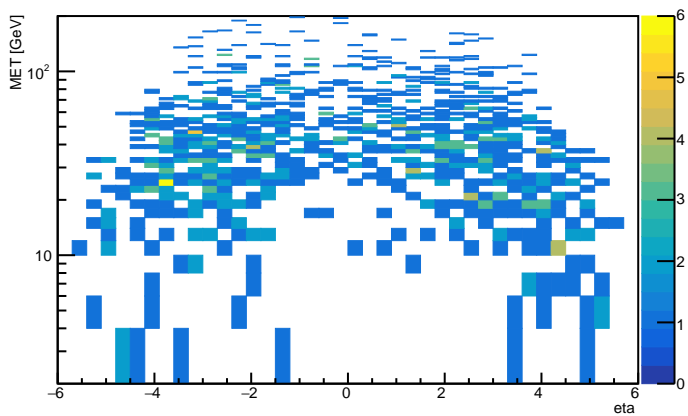
52p5\_dMchi-5\_ ctau 1cm reco leading Met eta vs pt: no cuts

52p5\_dMchi-5\_ ctau 1cm reco leading Met eta vs pt:  $n_{\text{jet}} \geq 1$ ,  $j1pt > 30$  GeV

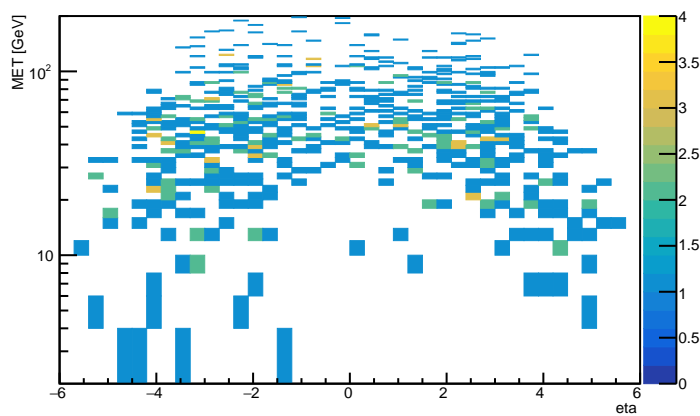
52p5\_dMchi-5\_ ctau 1cm reco leading Met eta vs pt: MET &gt; 120 GeV

52p5\_dMchi-5\_ ctau 1cm reco leading Met eta vs pt:  $j1pt > 120$ , at most 2 jets w/  $pt > 30$  GeV52p5\_dMchi-5\_ ctau 1cm reco leading Met eta vs pt: at least 2 mu w/  $pt > 2$  GeV and  $eta < 2.5$ 

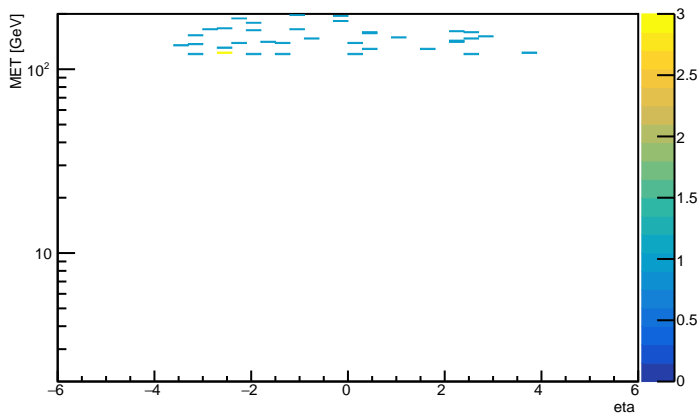
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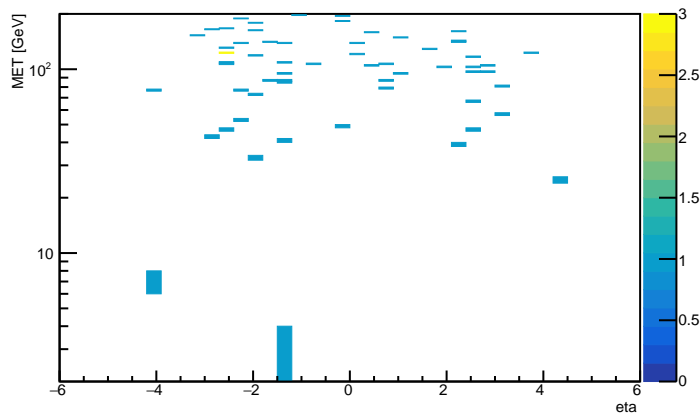
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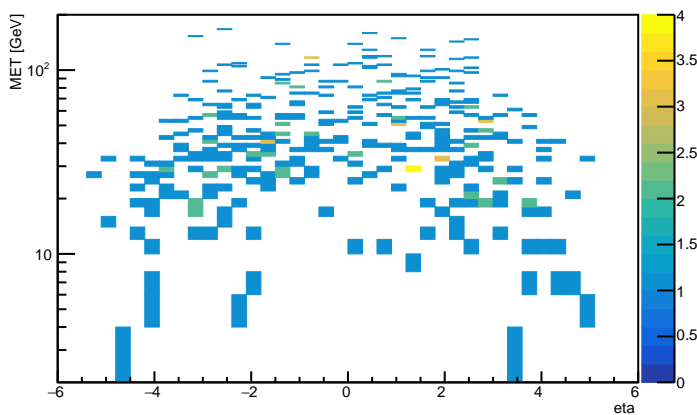
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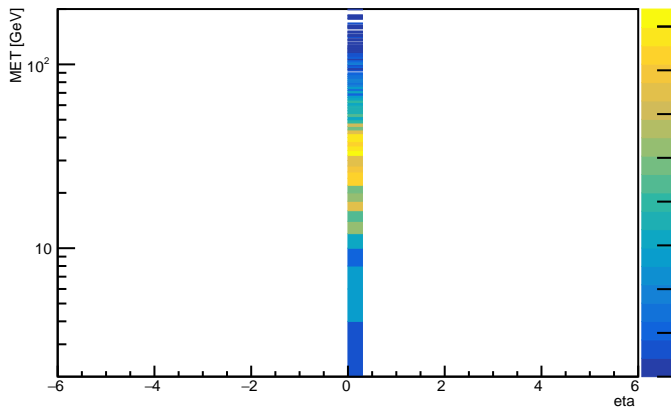
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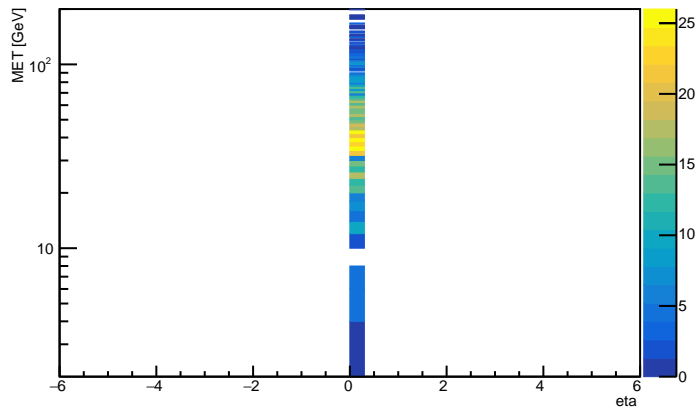
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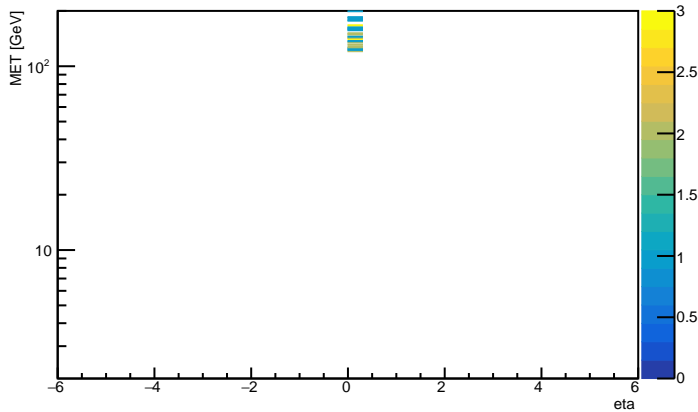
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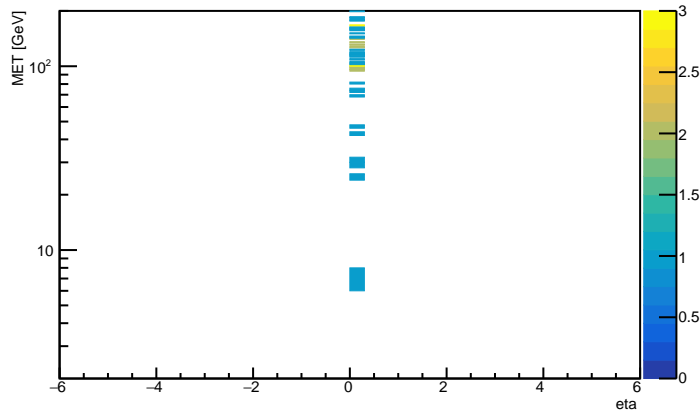
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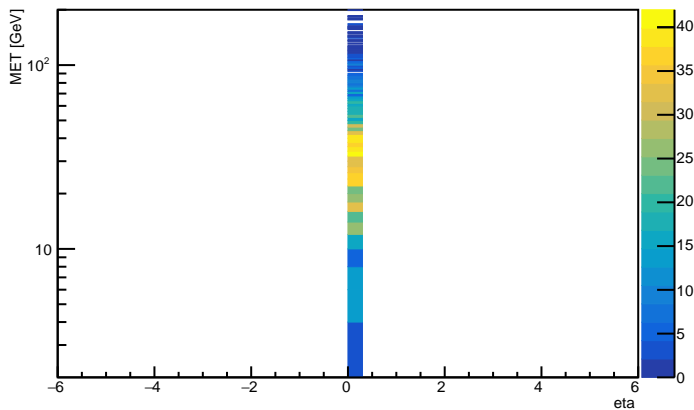
60\_dMchi-20\_ ctau 1cm reco leading Met eta vs pt: MET &gt; 120 GeV



60\_dMchi-20\_ ctau 1cm reco leading Met eta vs pt: j1pt &gt; 120, at most 2 jets w/ pt &gt; 30 GeV

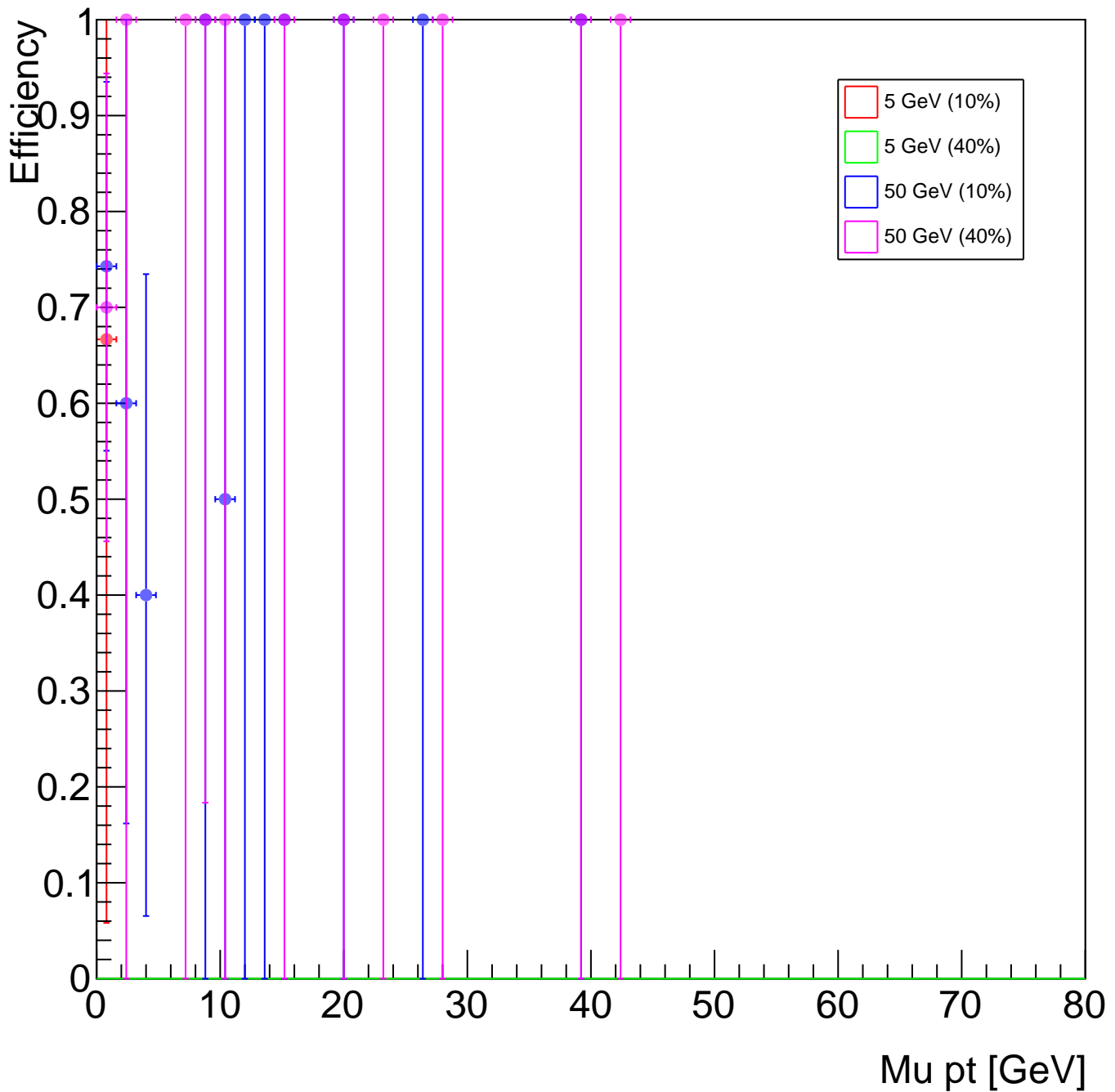


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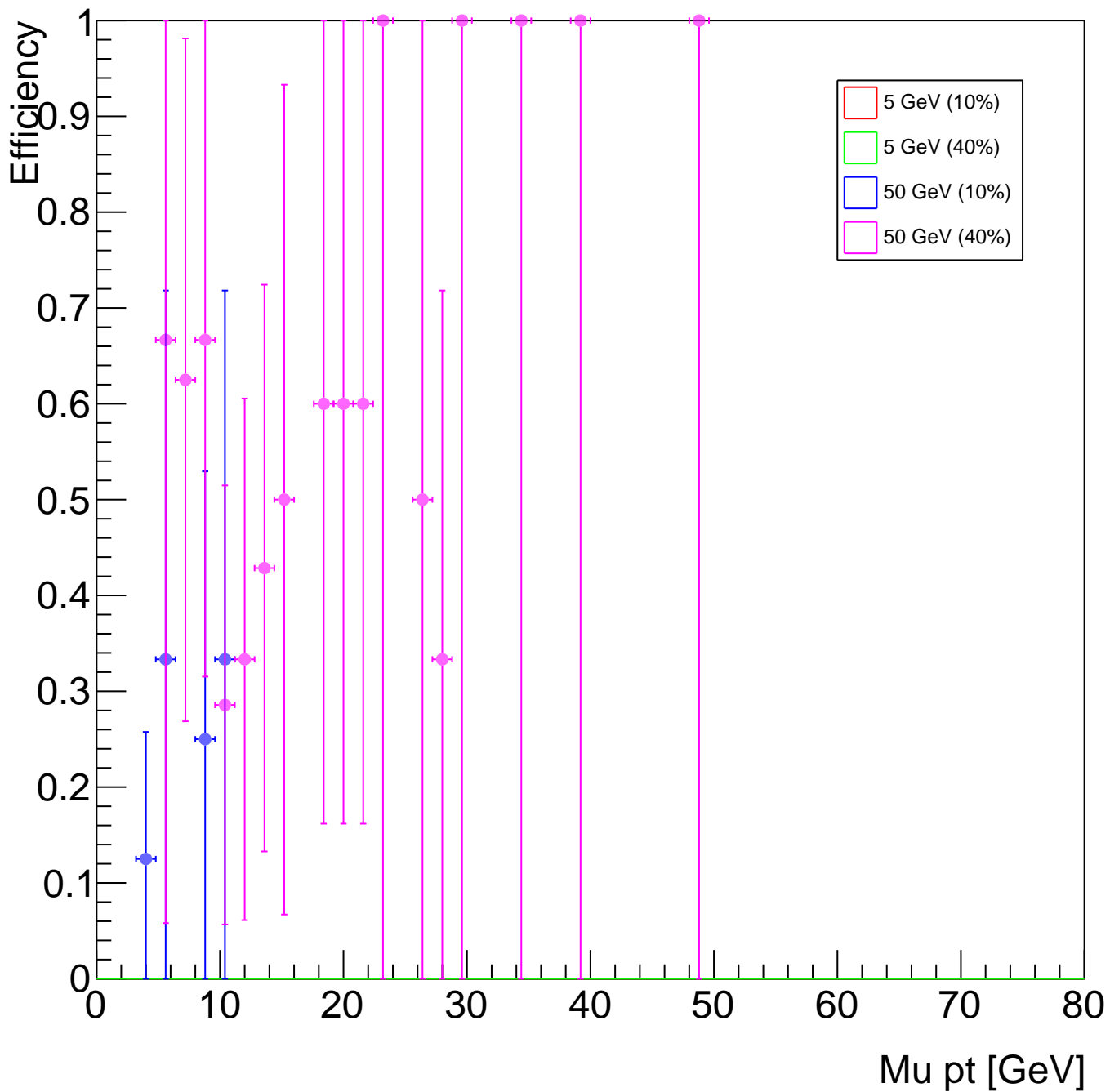


**efficiencies**

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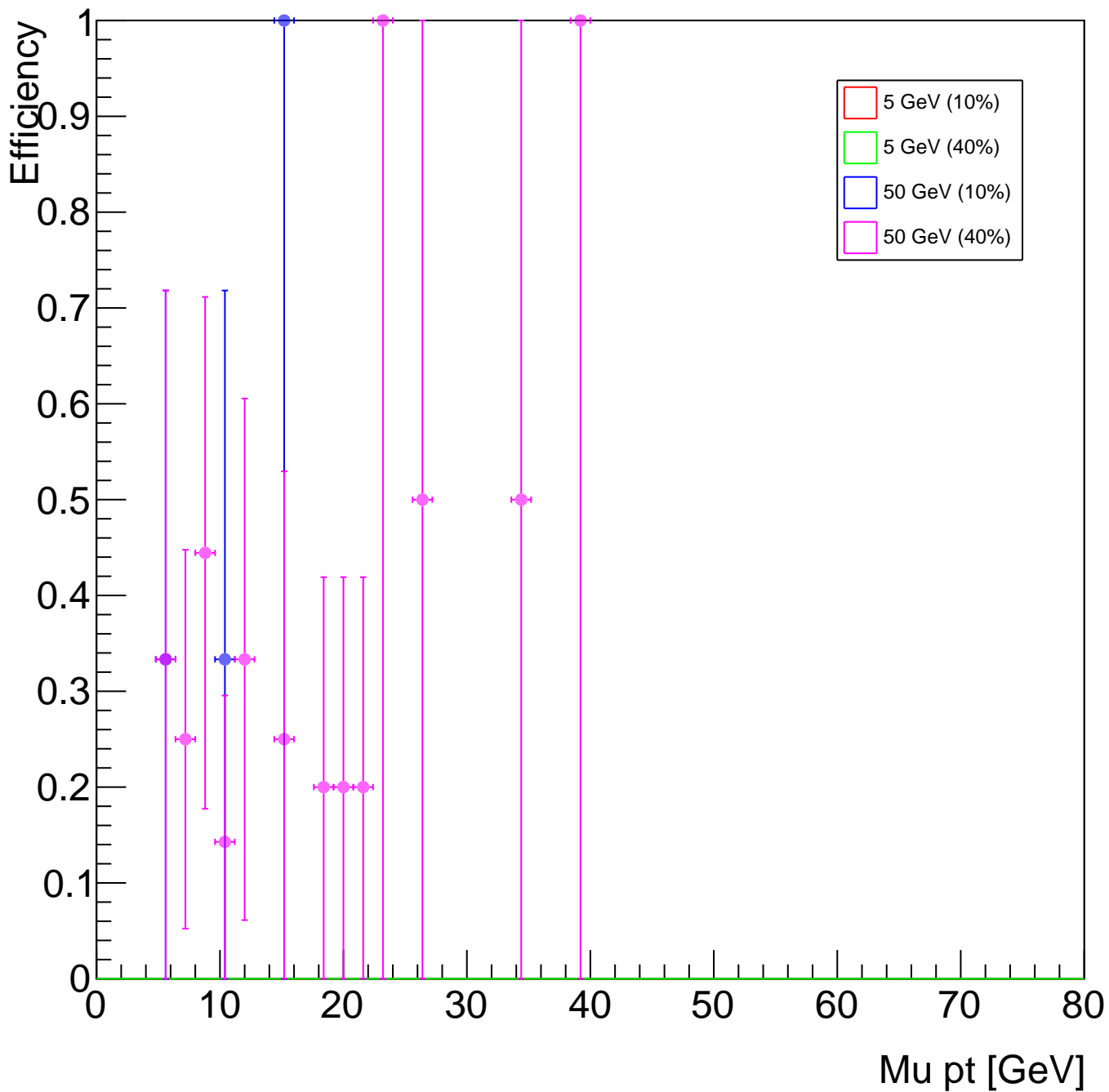


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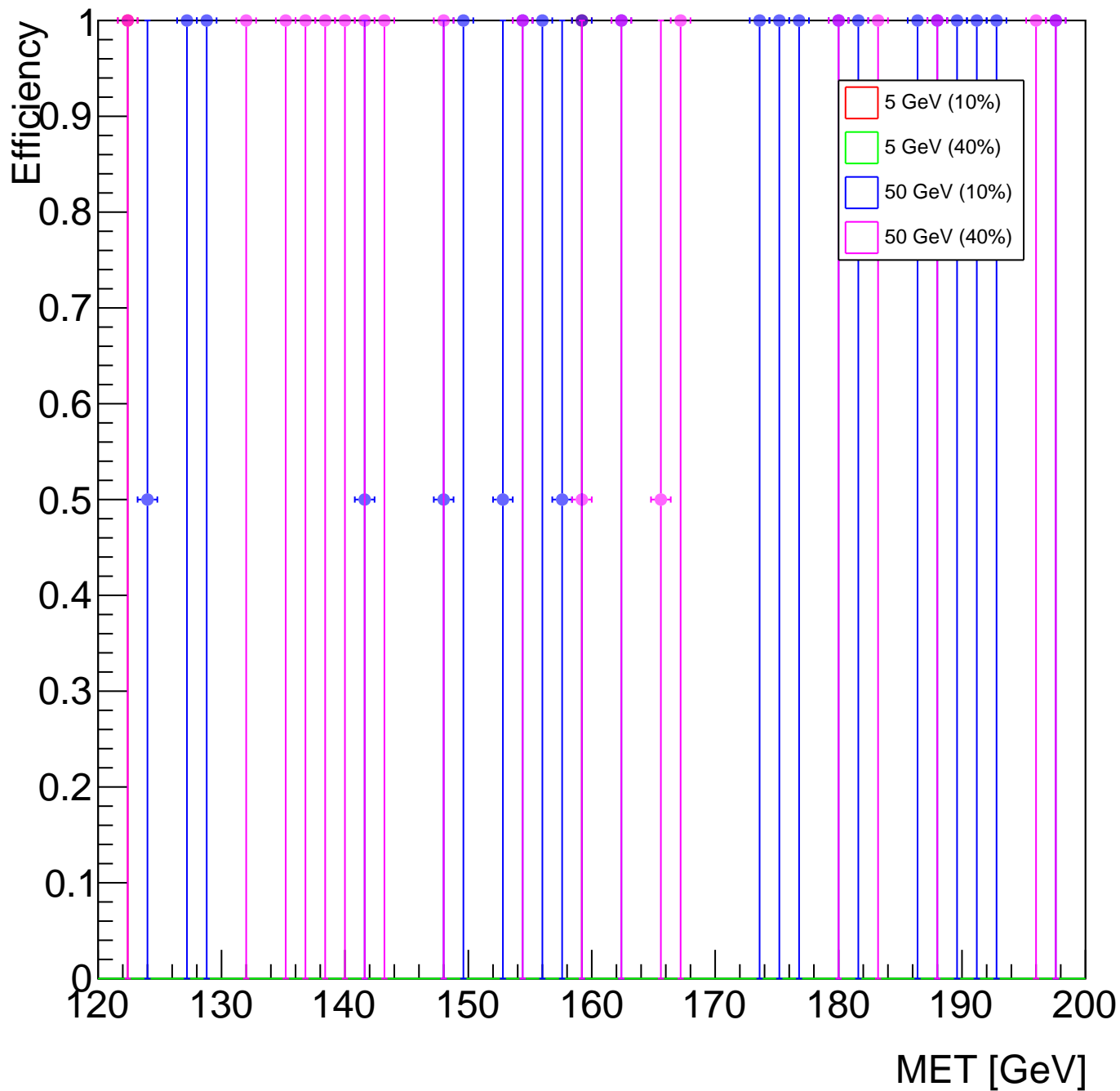




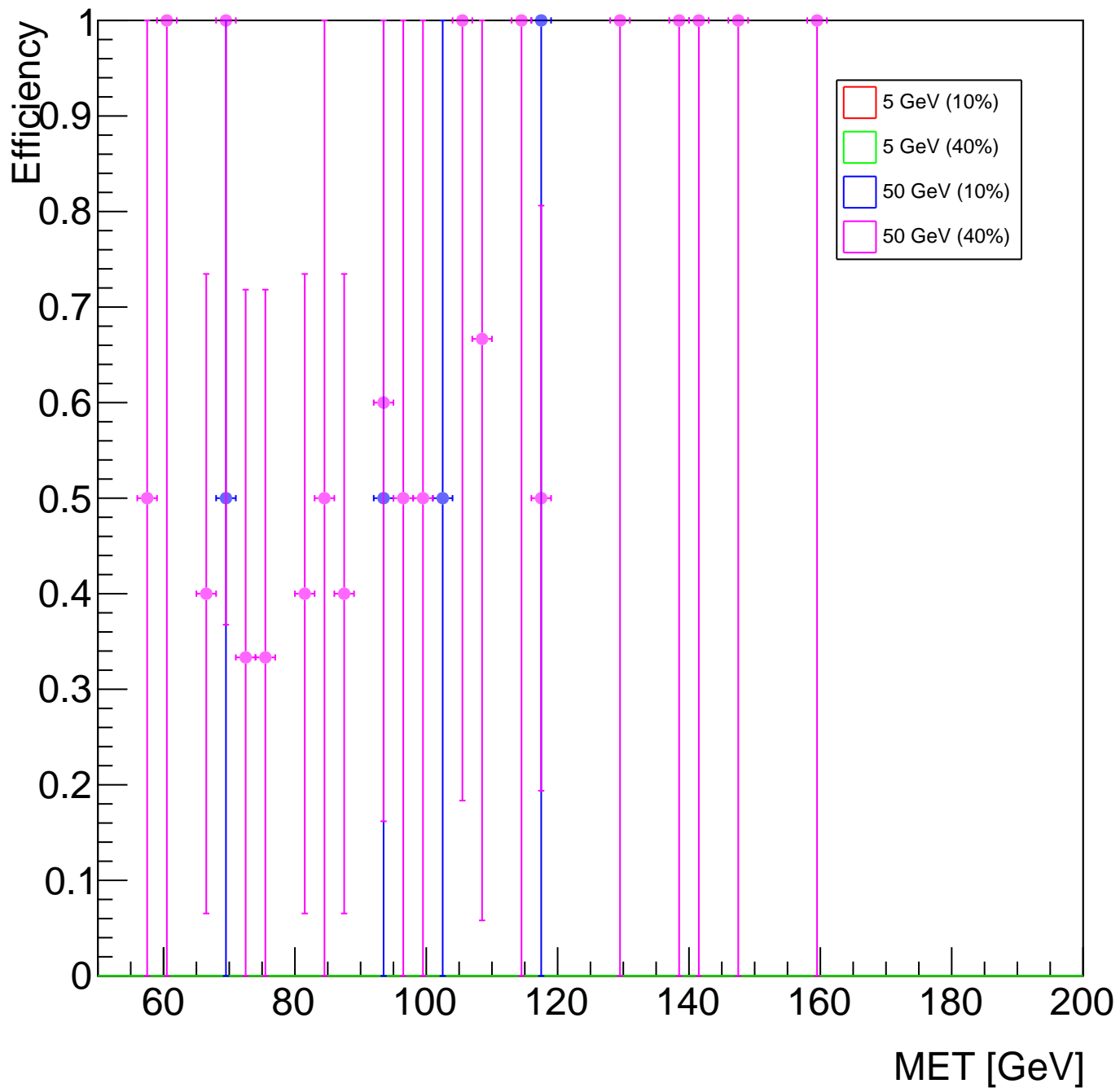
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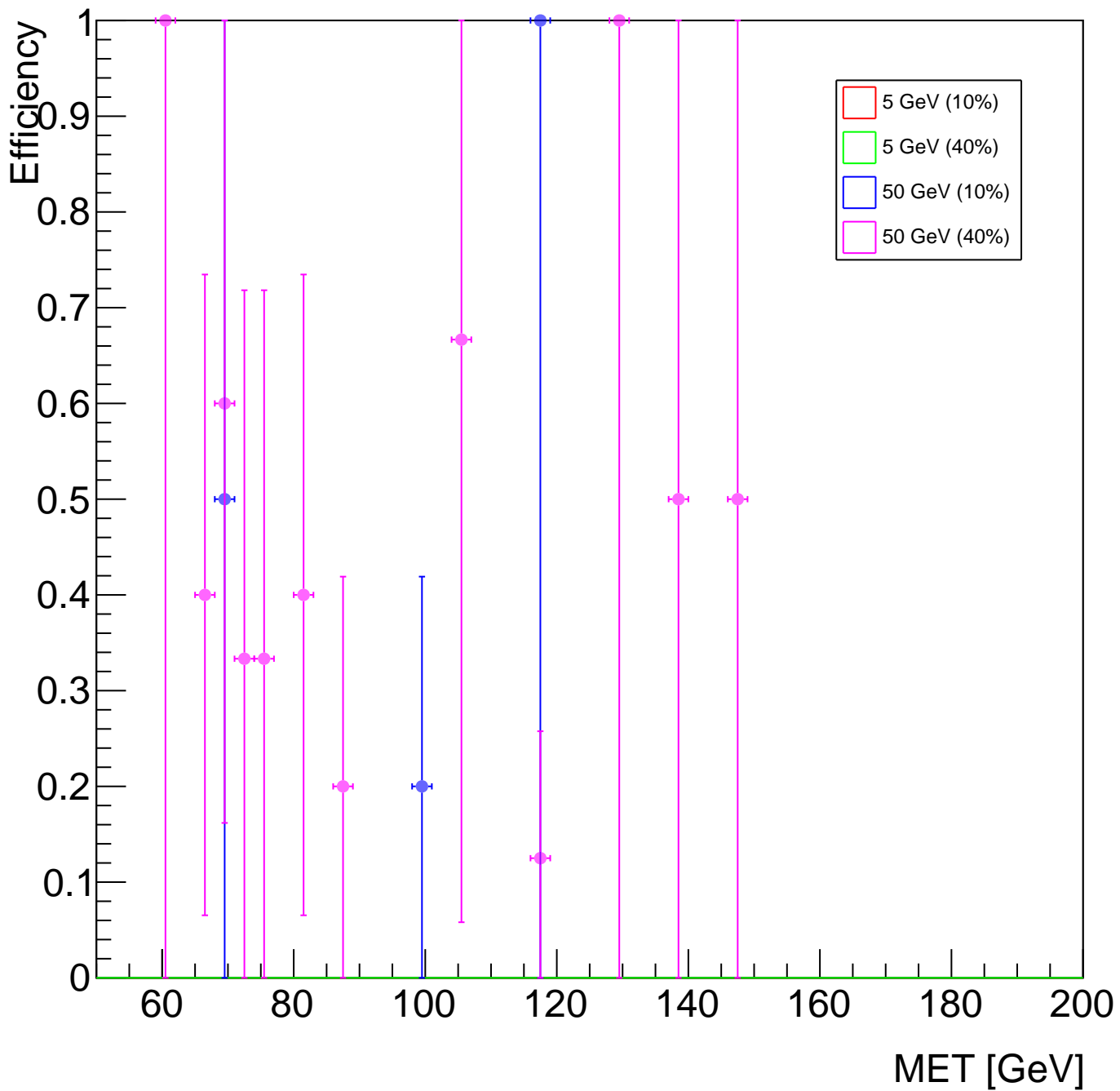
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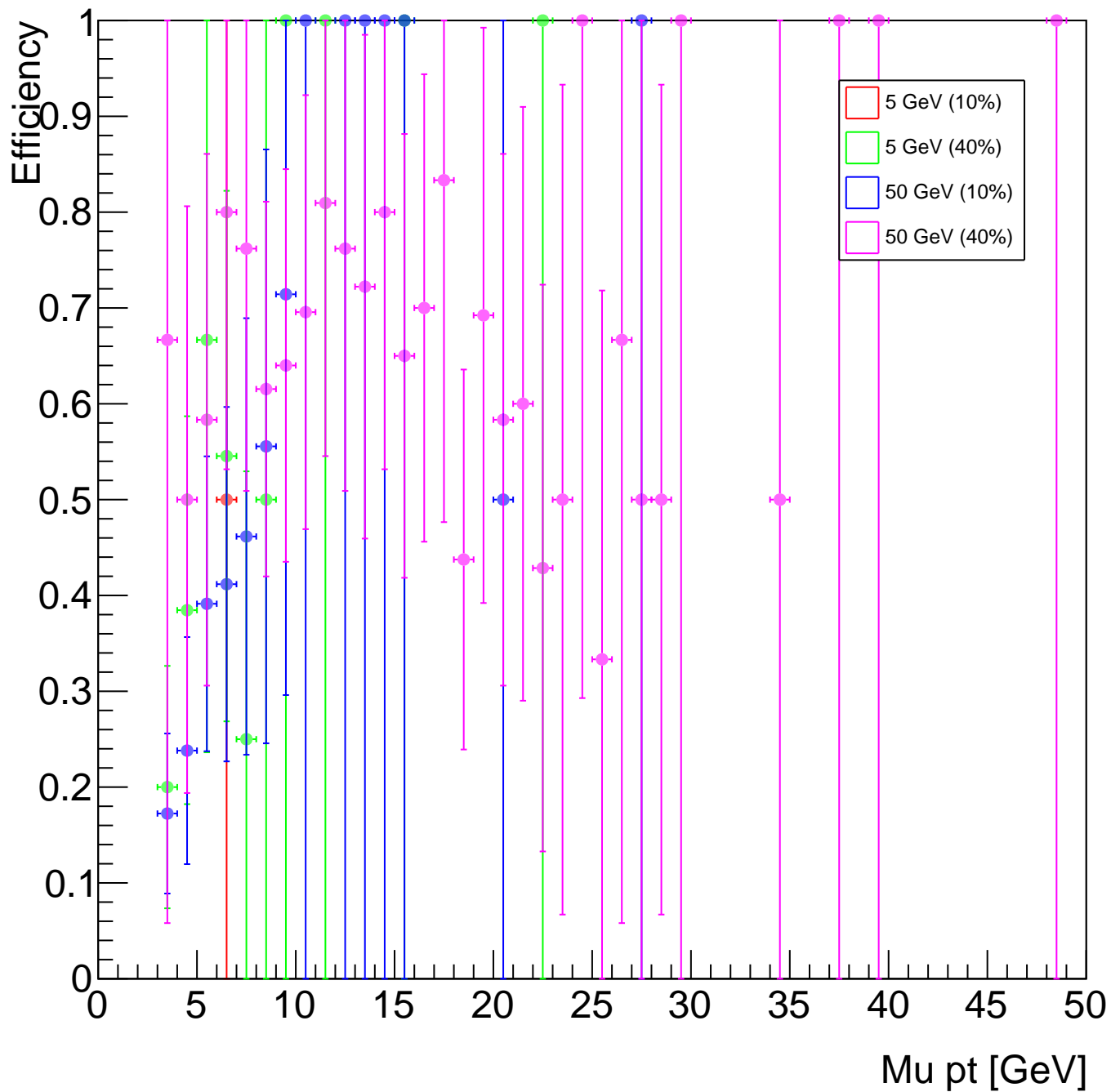
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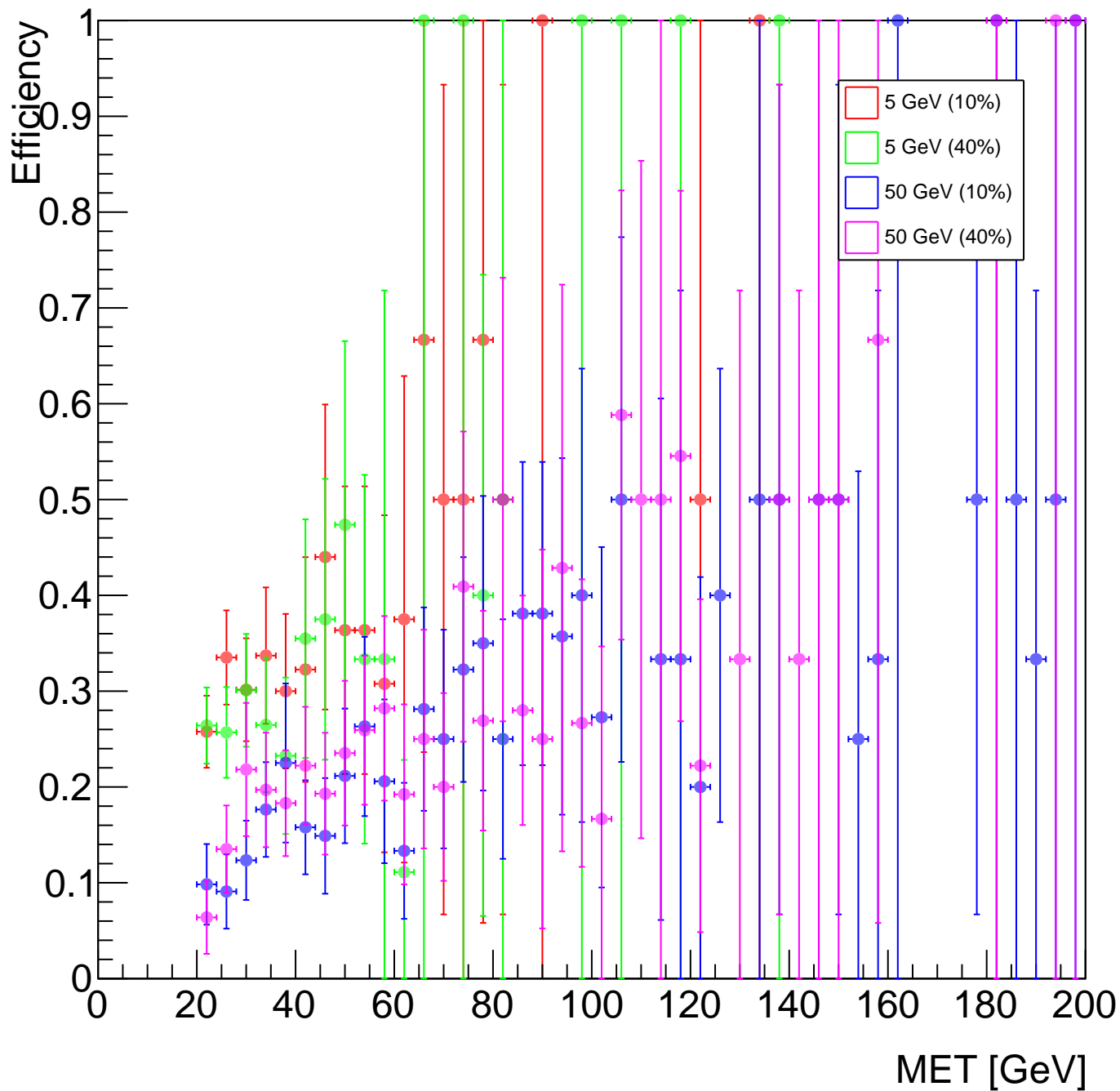
trigefficiency HLT\_DoubleMu3\_DZ\_PFMET50\_PFMHT60



# recoefficiency mu



# recoefficiency met



# recoefficiency met

