# ctau 100cm

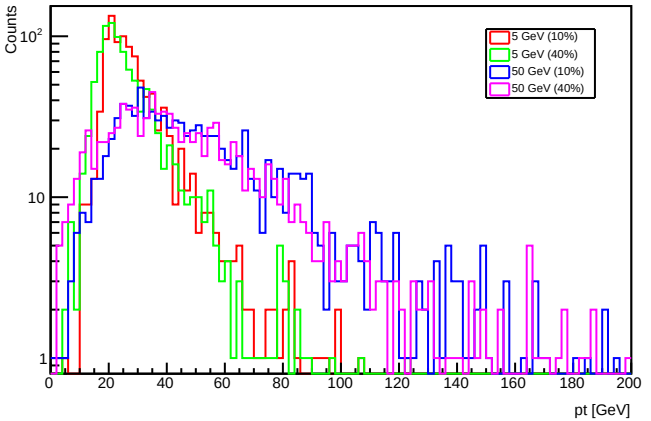
**nevents 5 GeV (10%): 1000(c1:371,c2:3,c3:6,c4:2)**

**nevents 5 GeV (40%): 1000(c1:371,c2:1,c3:1,c4:61)**

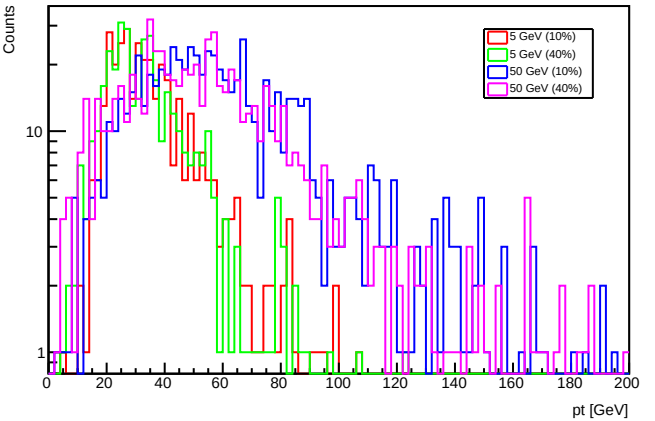
**nevents 50 GeV (10%): 1000(c1:723,c2:60,c3:62,c4:120)**

**nevents 50 GeV (40%): 1000(c1:704,c2:48,c3:59,c4:348)**

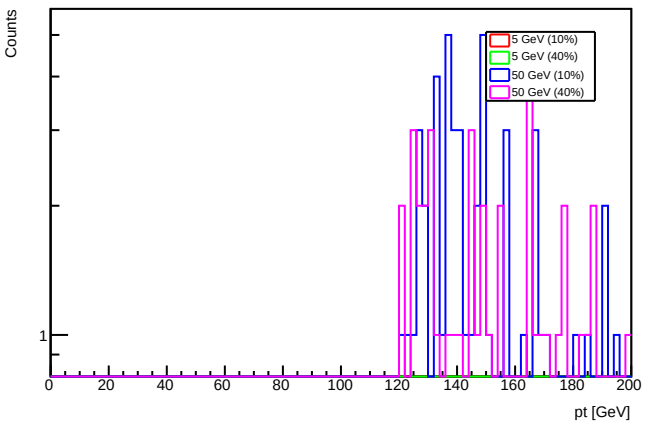
gen leading MET: no cuts



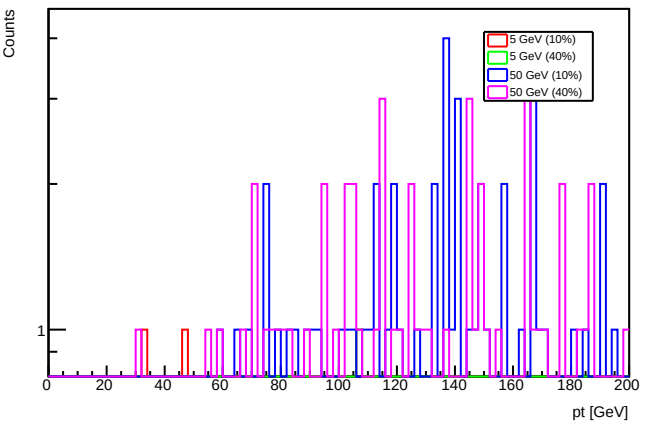

gen leading MET: n_jet >=1, j1pt > 30 GeV



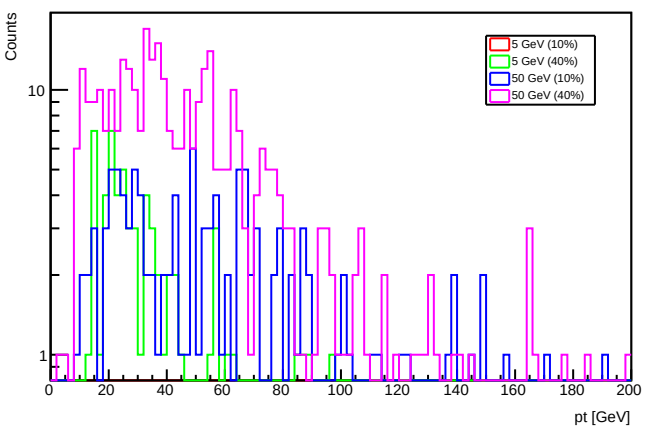

gen leading MET: MET > 120 GeV



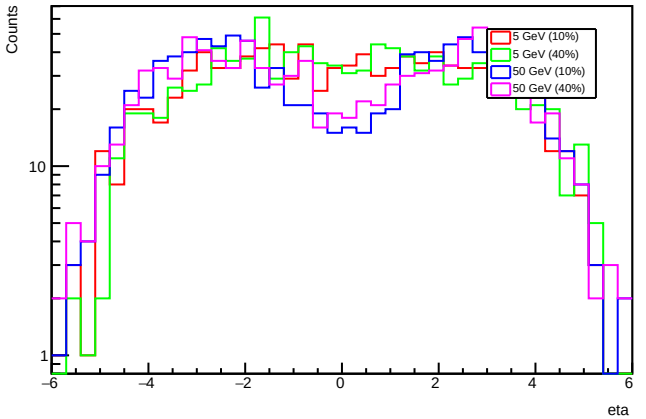

gen leading MET: j1pt >120, at most 2 jets w/ pt >30 GeV



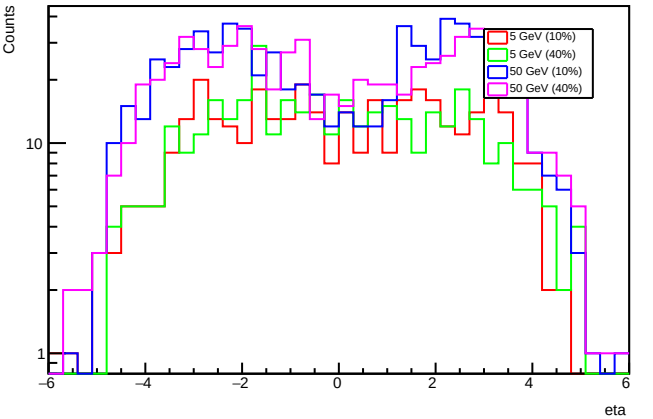

gen leading MET: at least 2 mu w/ pt ? 2 GeV and eta<2.5



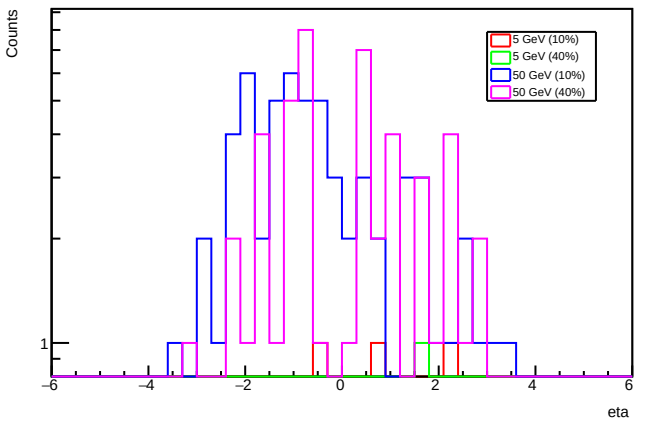
gen leading Met eta: no cuts



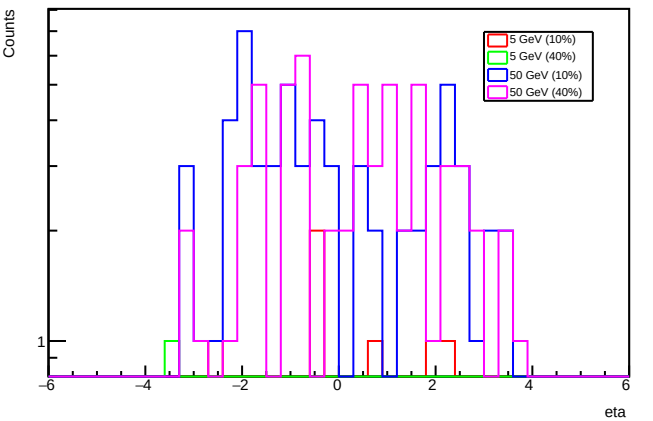

gen leading Met eta: n_jet >=1, j1pt > 30 GeV



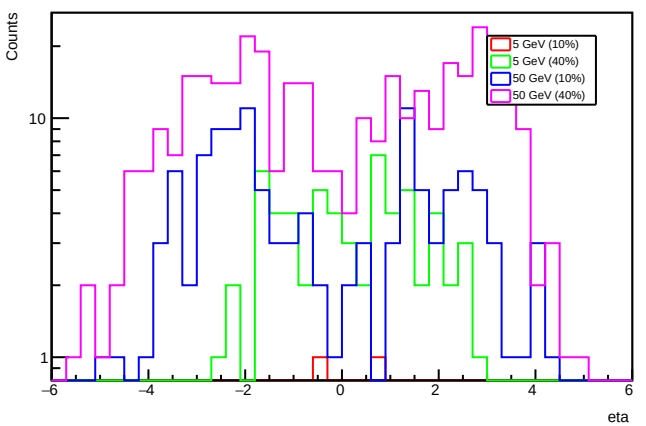

gen leading Met eta: MET > 120 GeV



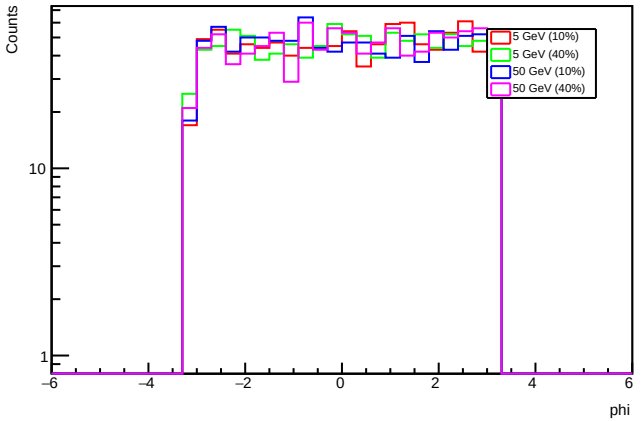

gen leading Met eta: j1pt >120, at most 2 jets w/ pt >30 GeV



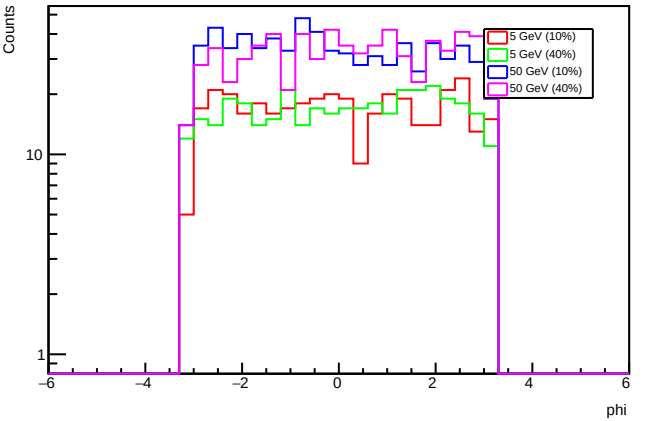

gen leading Met eta: at least 2 mu w/ pt ? 2 GeV and eta<2.5



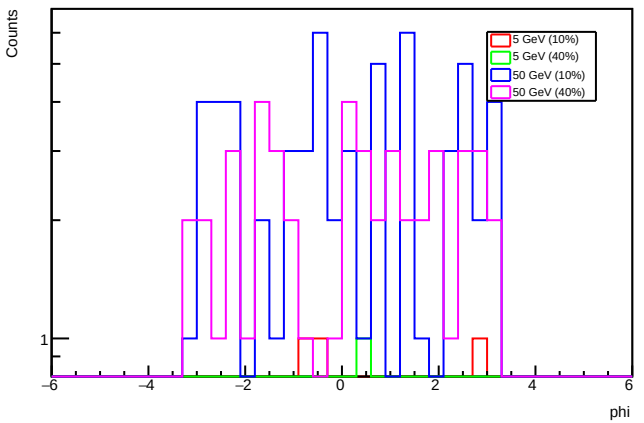
gen leading Met phi: no cuts



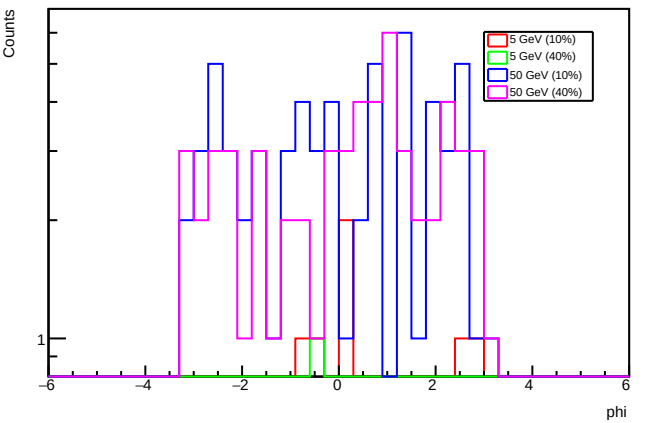

gen leading Met phi: n_jet >=1, j1pt > 30 GeV



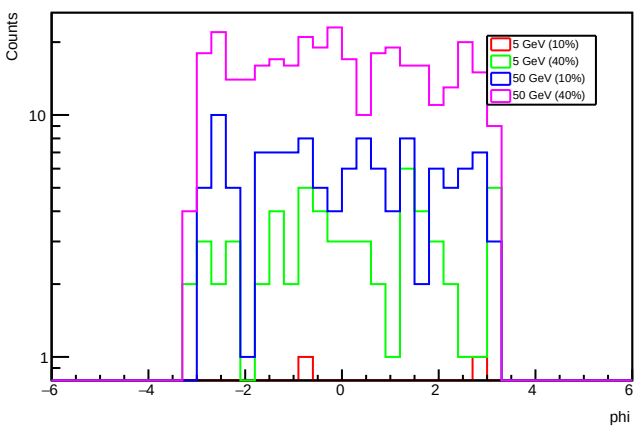

gen leading Met phi: MET > 120 GeV



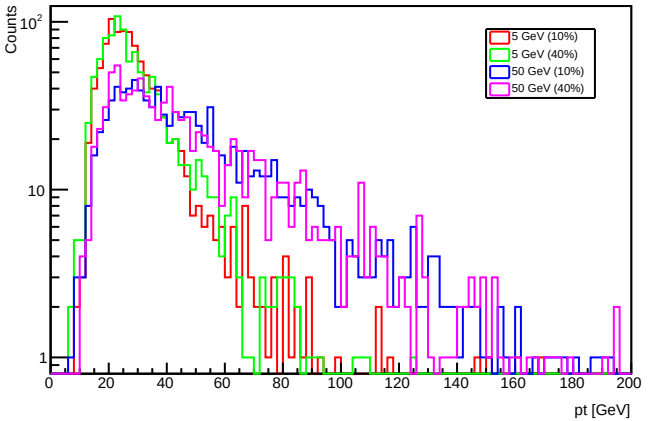

gen leading Met phi: j1pt >120, at most 2 jets w/ pt >30 GeV



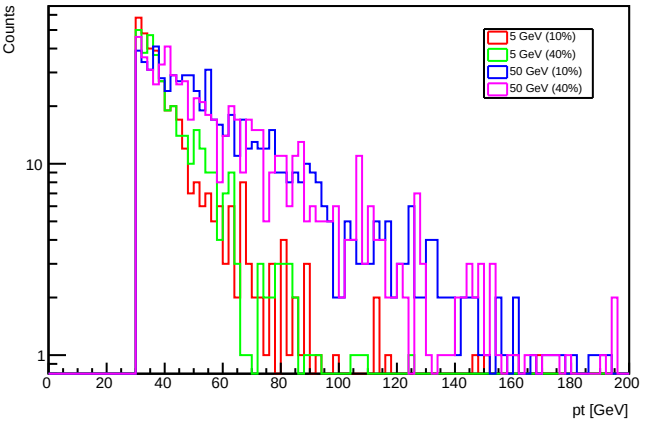

gen leading Met phi: at least 2 mu w/ pt ? 2 GeV and eta<2.5



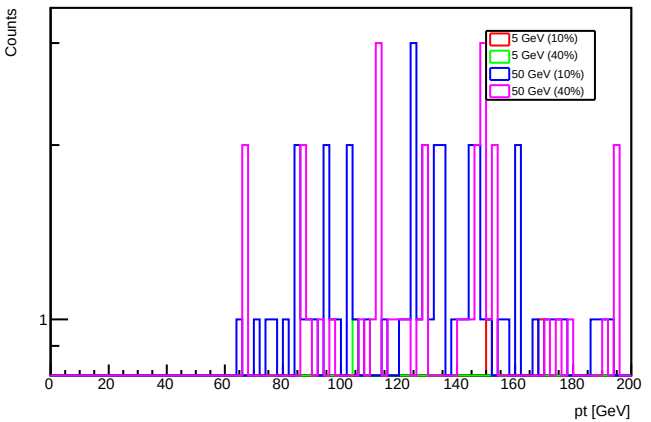
gen leading Jet pt: no cuts



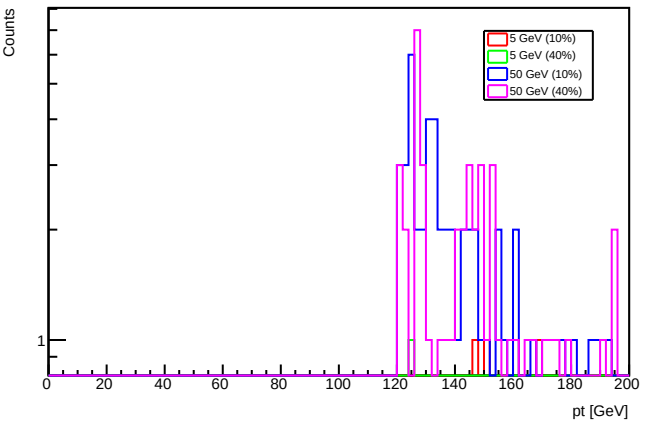

gen leading Jet pt: n_jet >=1, j1pt > 30 GeV



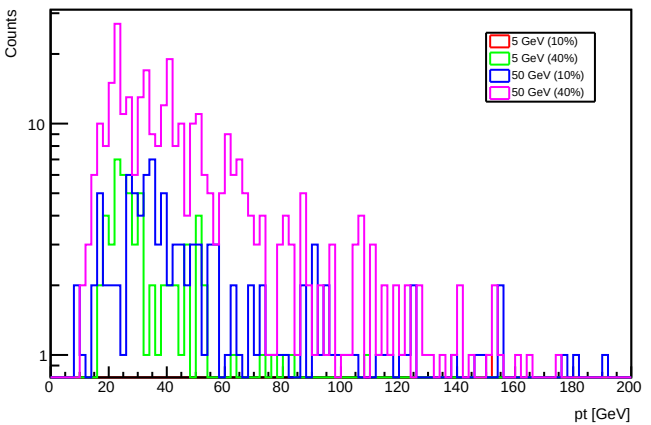

gen leading Jet pt: MET > 120 GeV



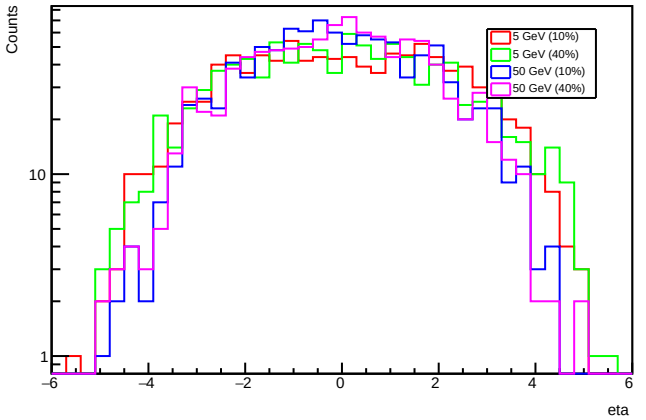

gen leading Jet pt: j1pt >120, at most 2 jets w/ pt >30 GeV



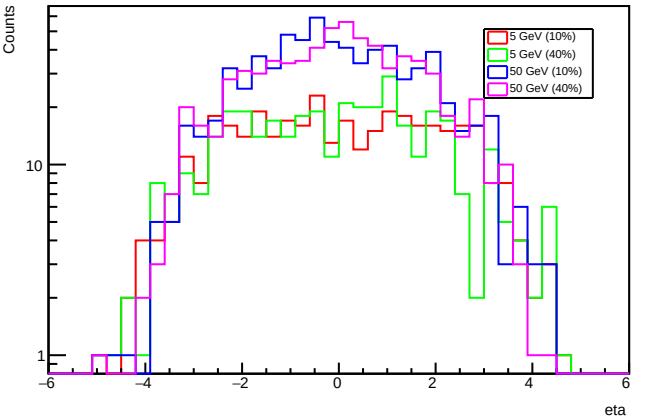

gen leading Jet pt: at least 2 mu w/ pt ? 2 GeV and eta<2.5



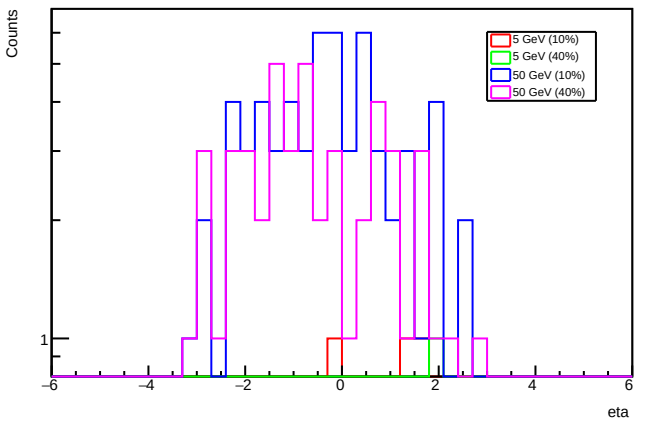
gen leading Jet eta: no cuts



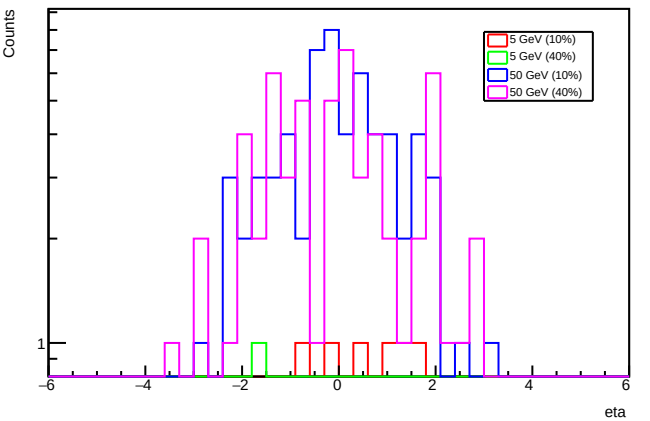

gen leading Jet eta: n_jet >=1, j1pt > 30 GeV



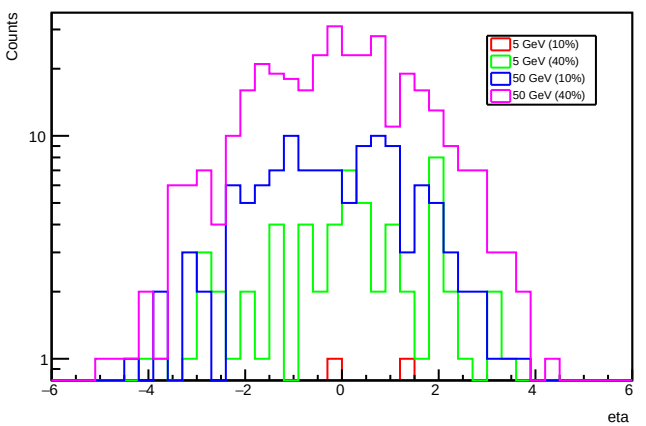

gen leading Jet eta: MET > 120 GeV



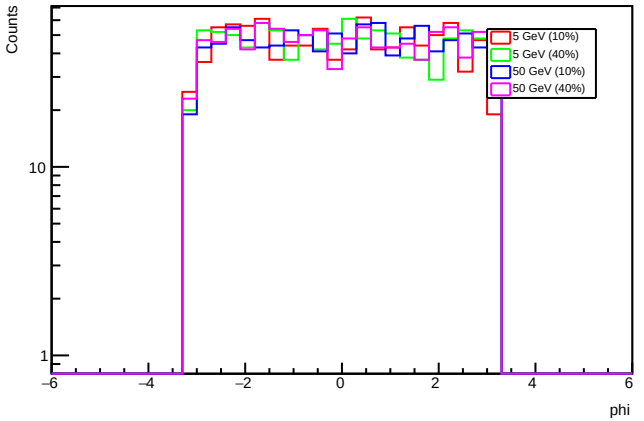

gen leading Jet eta: j1pt >120, at most 2 jets w/ pt >30 GeV



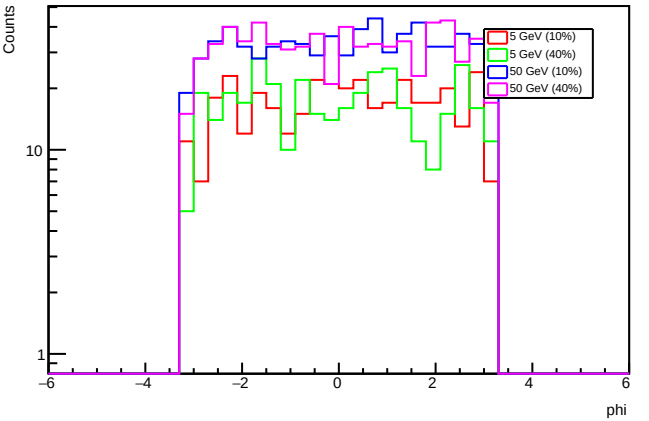

gen leading Jet eta: at least 2 mu w/ pt ? 2 GeV and eta<2.5



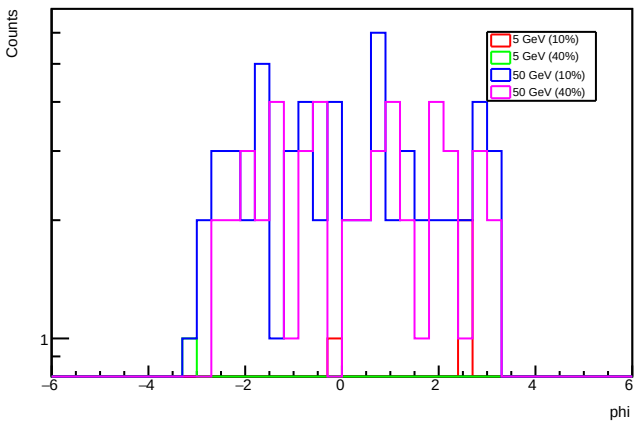
gen leading Jet phi: no cuts



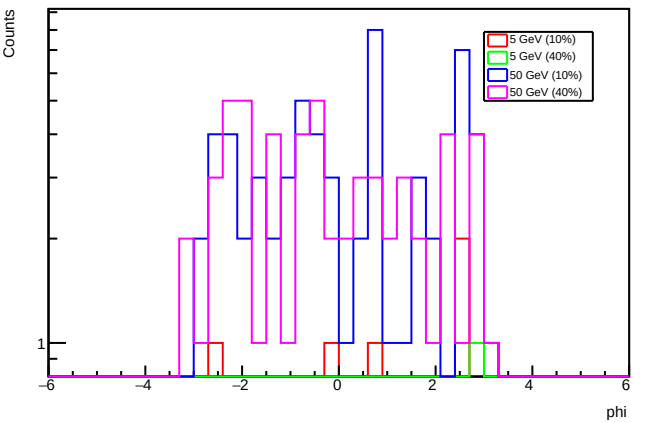

gen leading Jet phi: n_jet >=1, j1pt > 30 GeV



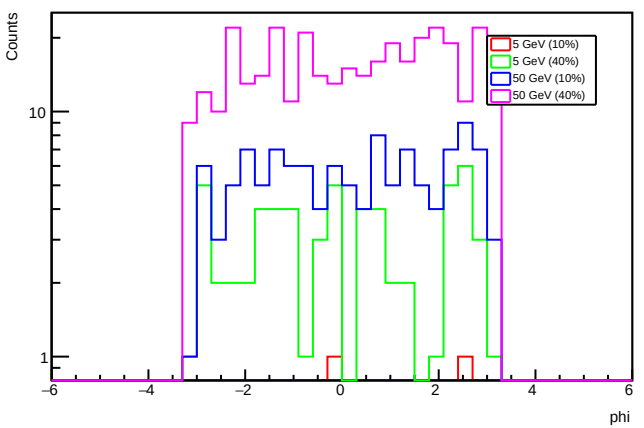

gen leading Jet phi: MET > 120 GeV



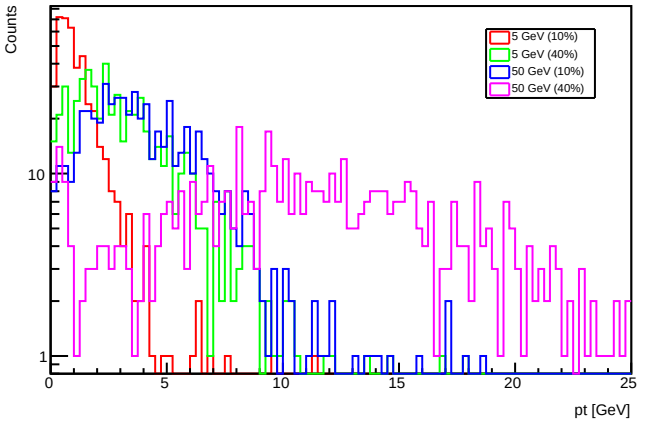

gen leading Jet phi: j1pt >120, at most 2 jets w/ pt >30 GeV



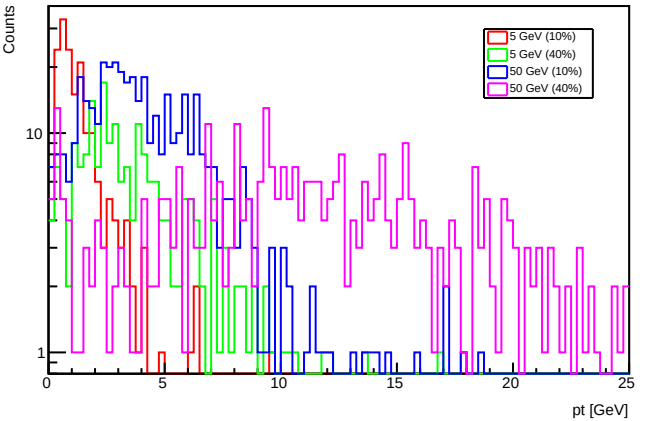

gen leading Jet phi: at least 2 mu w/ pt ? 2 GeV and eta<2.5



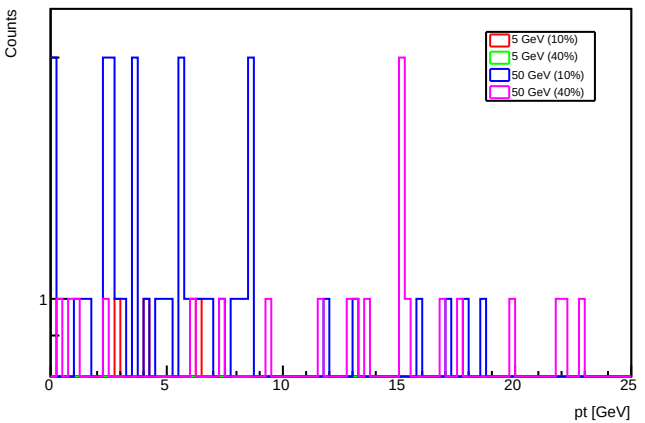
gen leading Mu pt: no cuts



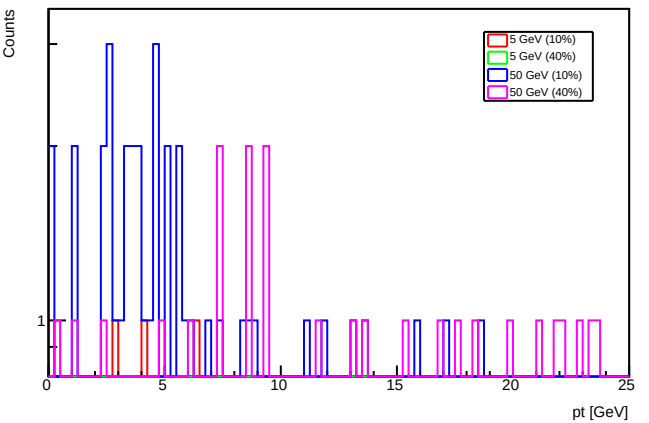

gen leading Mu pt: n_jet >=1, j1pt > 30 GeV



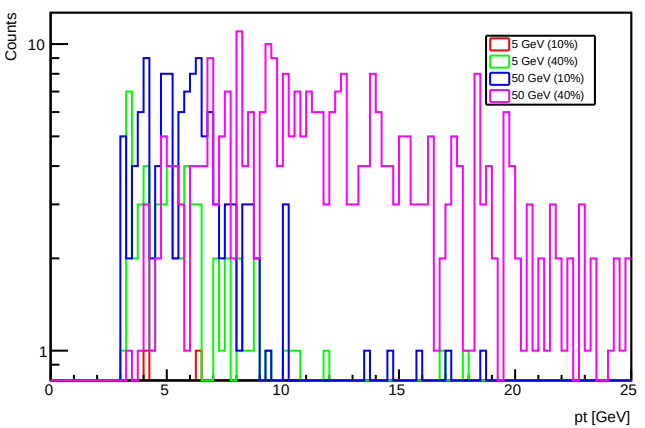

gen leading Mu pt: MET > 120 GeV



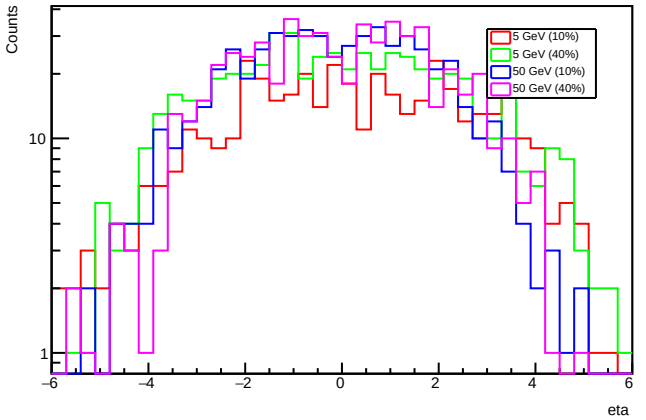

gen leading Mu pt: j1pt >120, at most 2 jets w/ pt >30 GeV



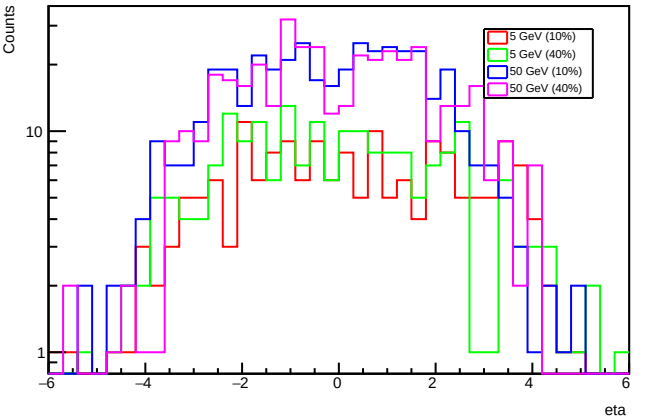

gen leading Mu pt: at least 2 mu w/ pt ? 2 GeV and eta<2.5



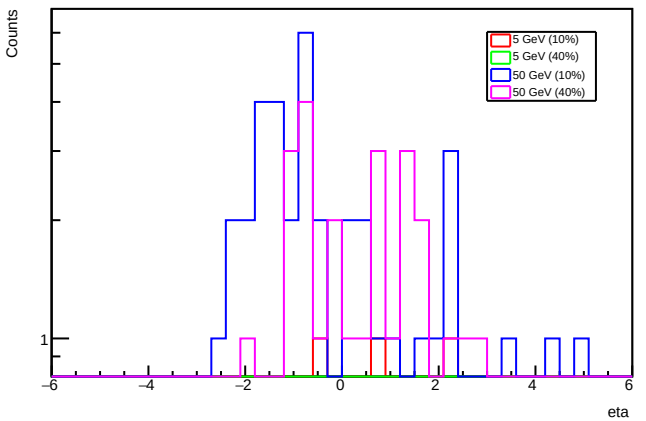
gen leading Mu eta: no cuts



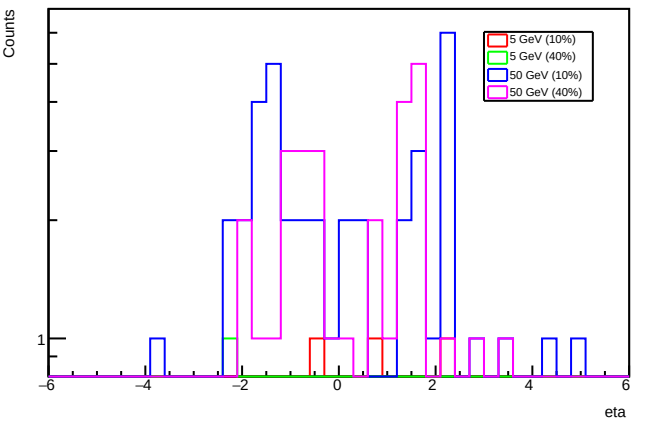

gen leading Mu eta: n_jet >=1, j1pt > 30 GeV



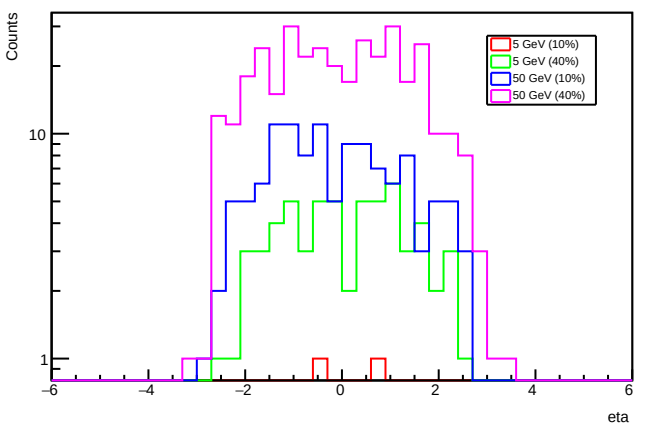

gen leading Mu eta: MET > 120 GeV



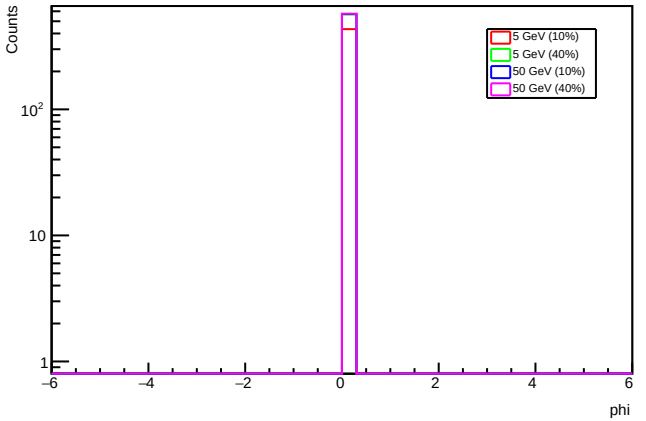

gen leading Mu eta: j1pt >120, at most 2 jets w/ pt >30 GeV



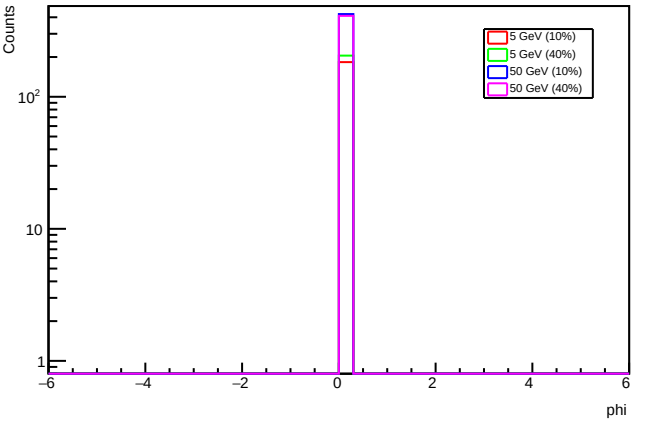

gen leading Mu eta: at least 2 mu w/ pt ? 2 GeV and eta<2.5



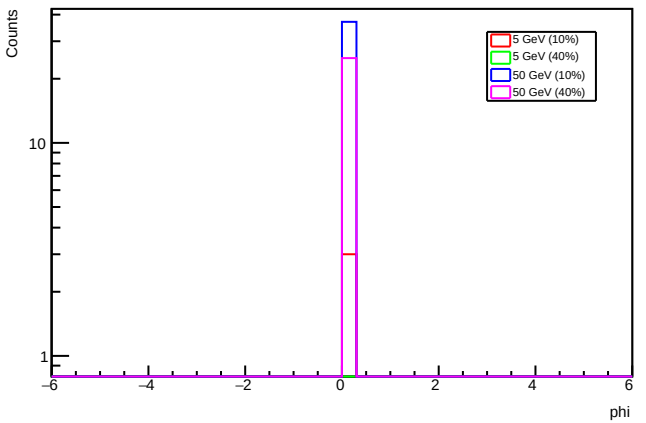
gen leading Mu phi: no cuts



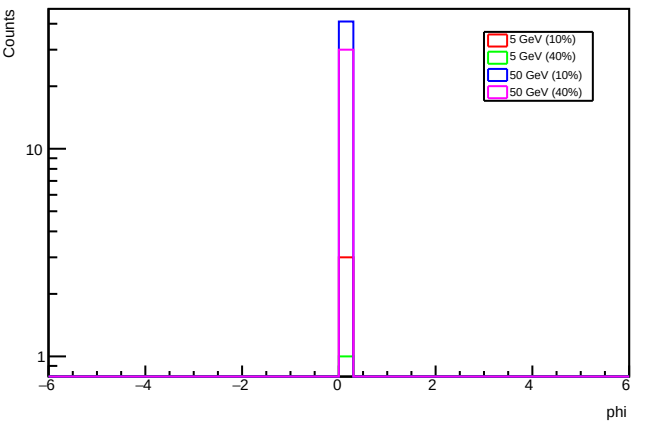

gen leading Mu phi: n_jet >=1, j1pt > 30 GeV



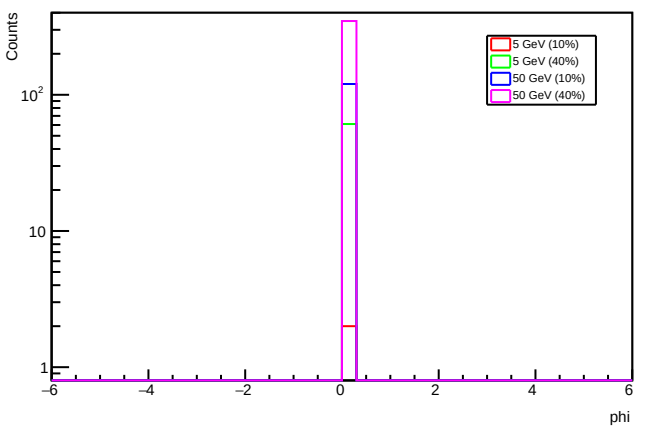

gen leading Mu phi: MET > 120 GeV



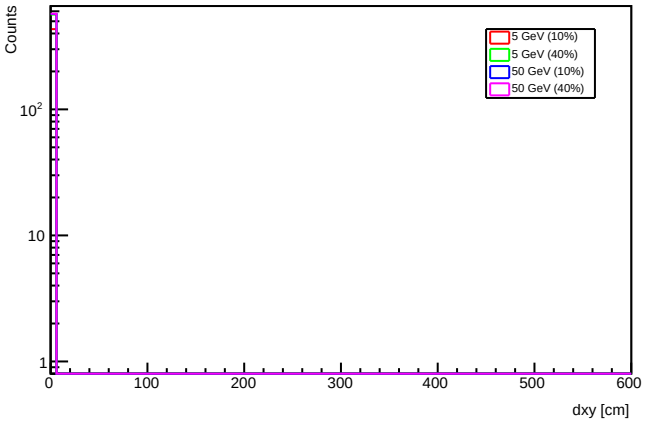

gen leading Mu phi: j1pt >120, at most 2 jets w/ pt >30 GeV



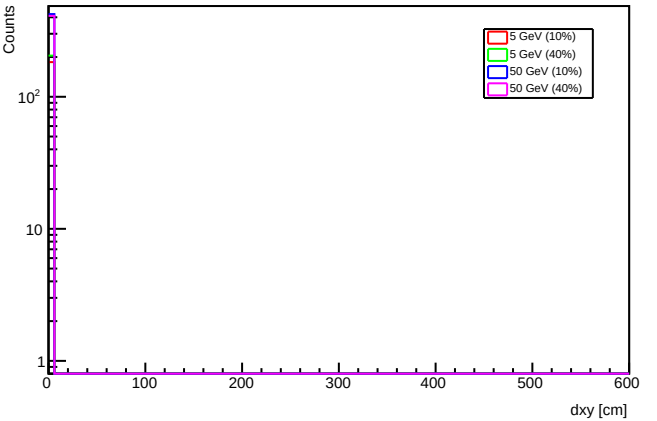

gen leading Mu phi: at least 2 mu w/ pt ? 2 GeV and eta<2.5



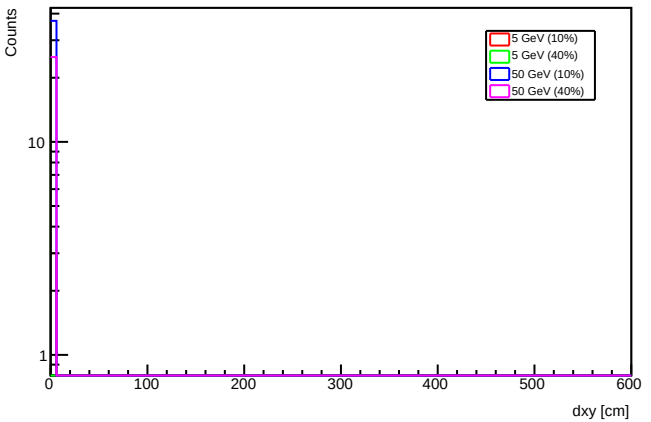
gen leading Mu vxy: no cuts



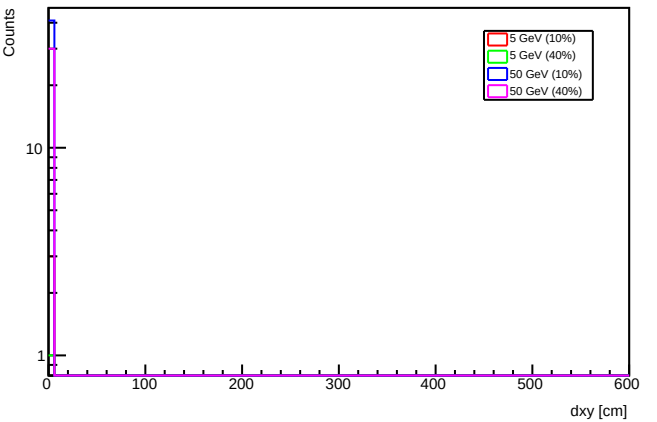

gen leading Mu vxy: n_jet >=1, j1pt > 30 GeV



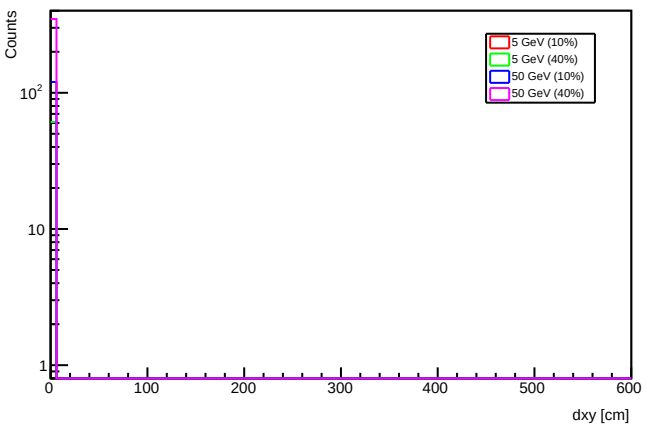

gen leading Mu vxy: MET > 120 GeV



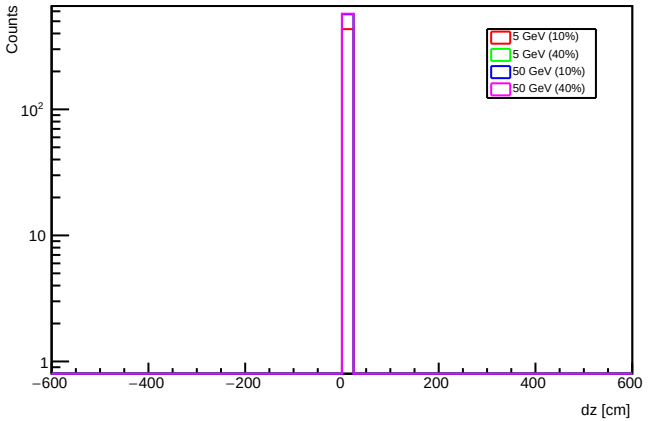

gen leading Mu vxy: j1pt >120, at most 2 jets w/ pt >30 GeV



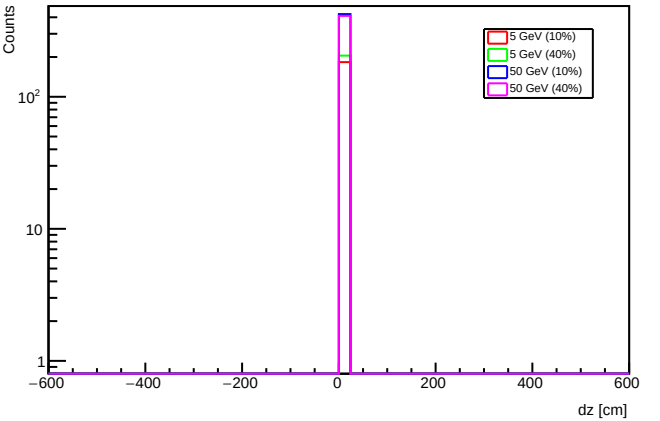

gen leading Mu vxy: at least 2 mu w/ pt ? 2 GeV and eta<2.5



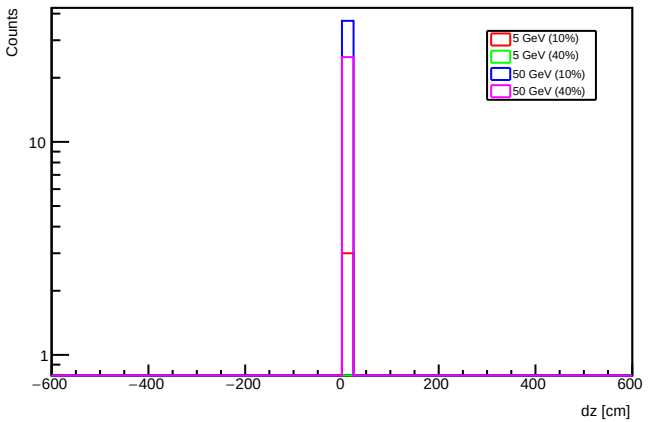
gen leading Mu vz: no cuts



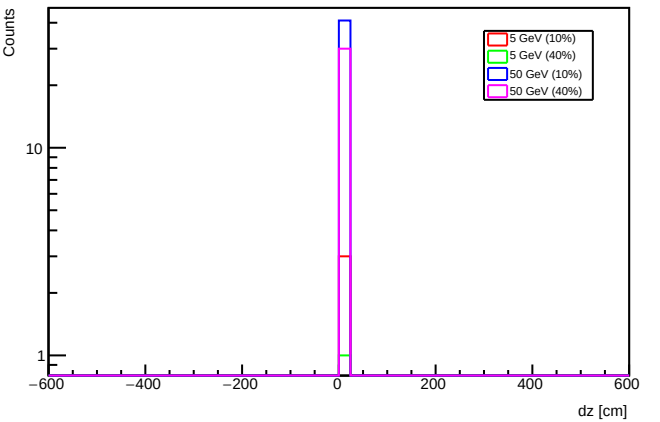

gen leading Mu vz: n_jet >=1, j1pt > 30 GeV



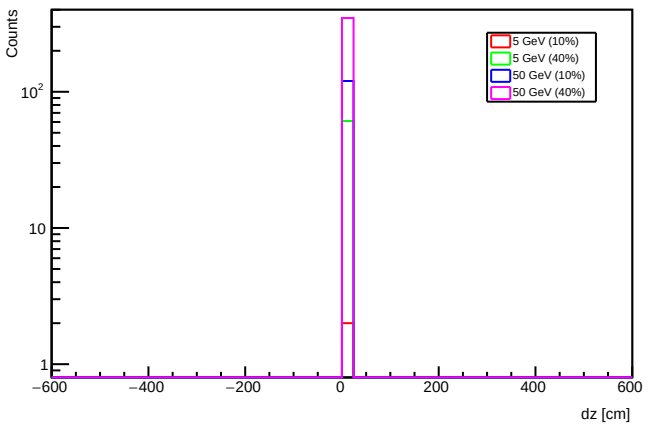

gen leading Mu vz: MET > 120 GeV



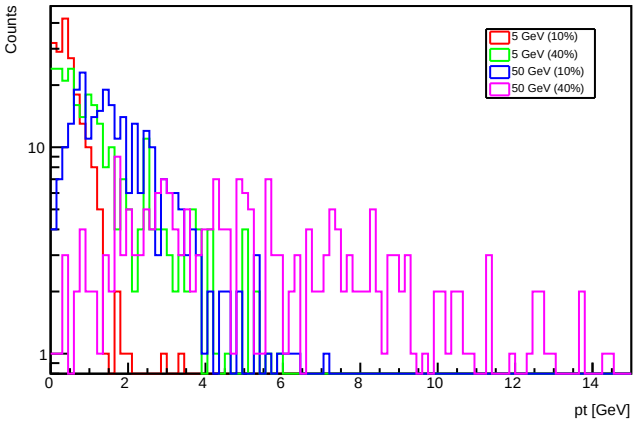

gen leading Mu vz: j1pt >120, at most 2 jets w/ pt >30 GeV



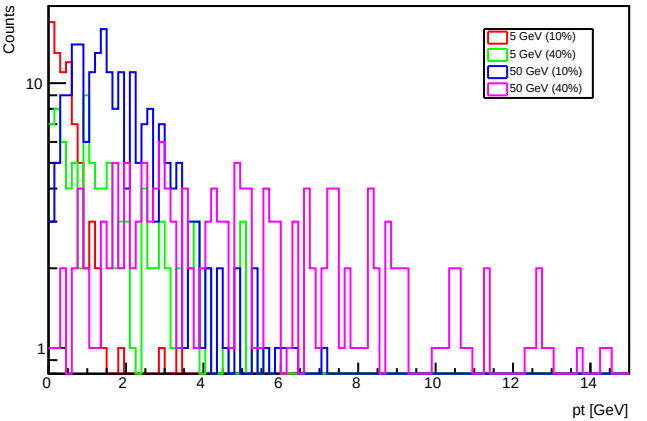

gen leading Mu vz: at least 2 mu w/ pt ? 2 GeV and eta<2.5



gen subleading Mu pt: no cuts




gen subleading Mu pt: n_jet >=1, j1pt > 30 GeV

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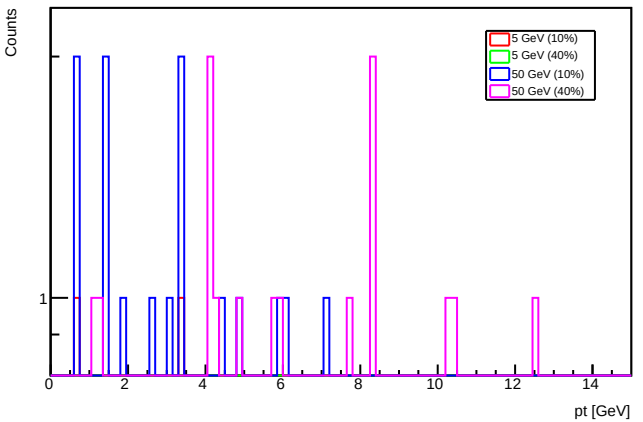
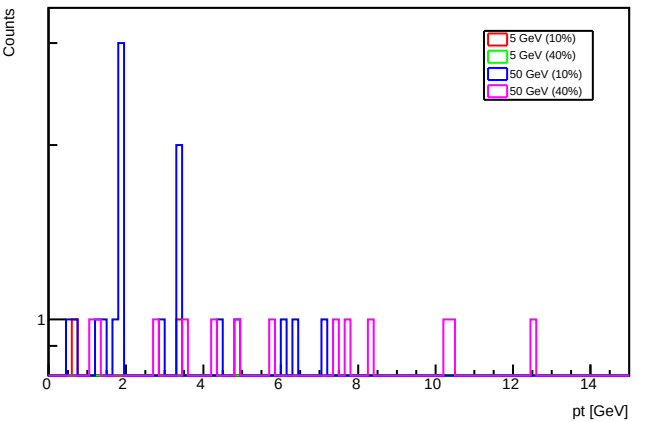
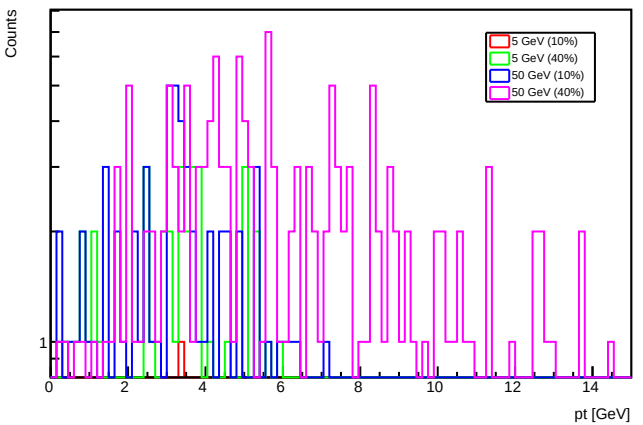


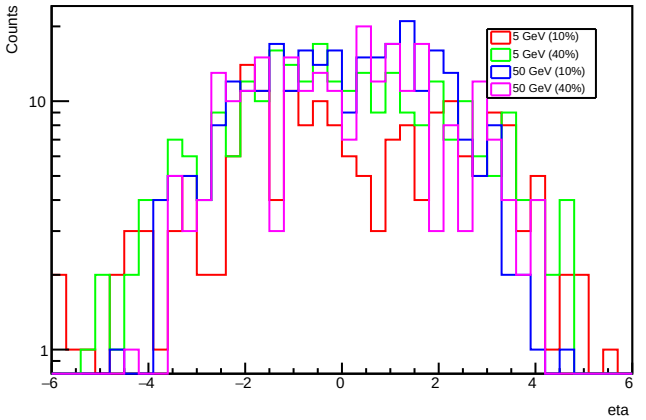

gen subleading Mu pt: j1pt >120, at most 2 jets w/ pt >30 GeV



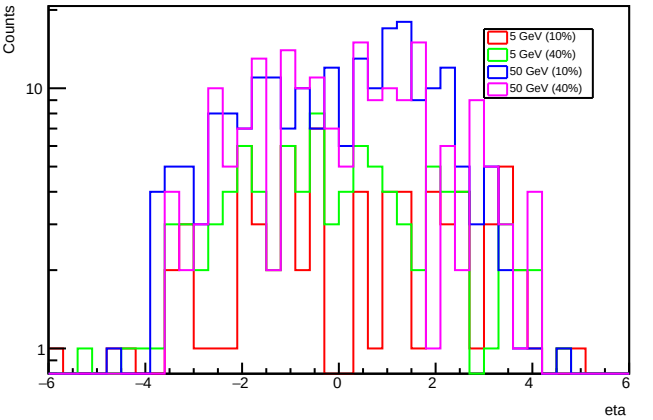

gen subleading Mu pt: at least 2 mu w/ pt ? 2 GeV and eta<2.5



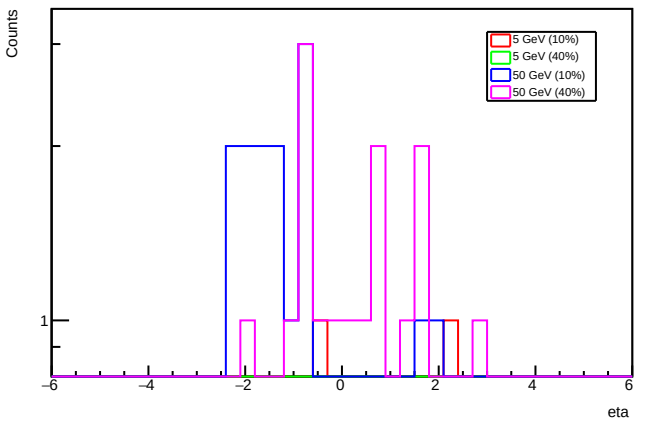
gen subleading Mu eta: no cuts



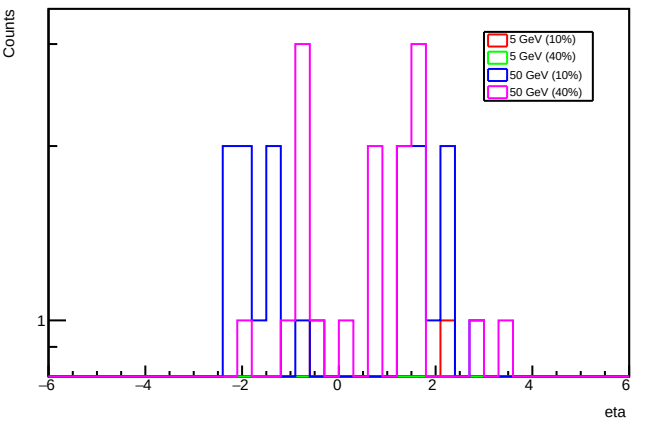

gen subleading Mu eta: n_jet >=1, j1pt > 30 GeV



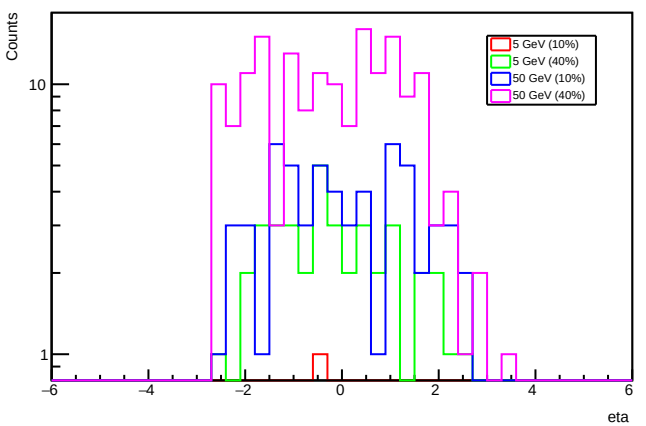

gen subleading Mu eta: MET > 120 GeV



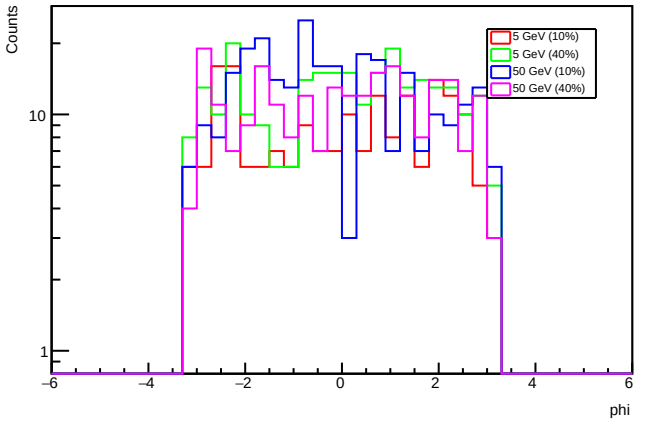

gen subleading Mu eta: j1pt >120, at most 2 jets w/ pt >30 GeV



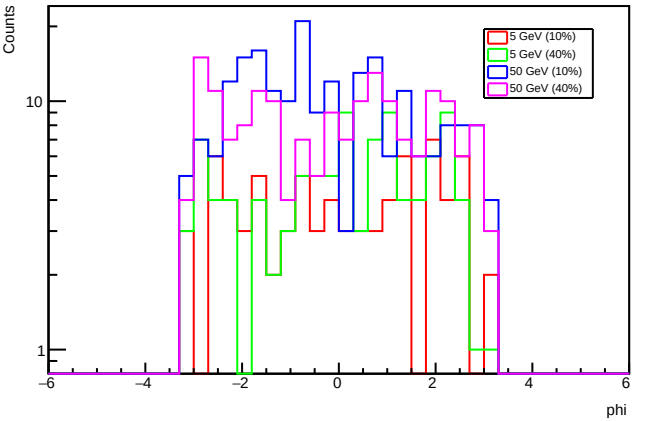

gen subleading Mu eta: at least 2 mu w/ pt ? 2 GeV and eta<2.5



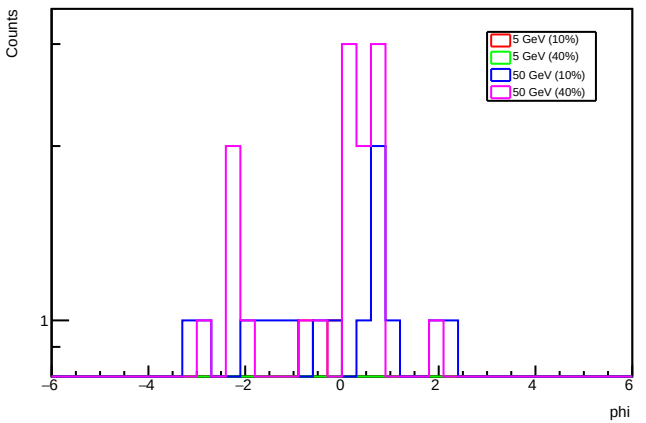
gen subleading Mu phi: no cuts



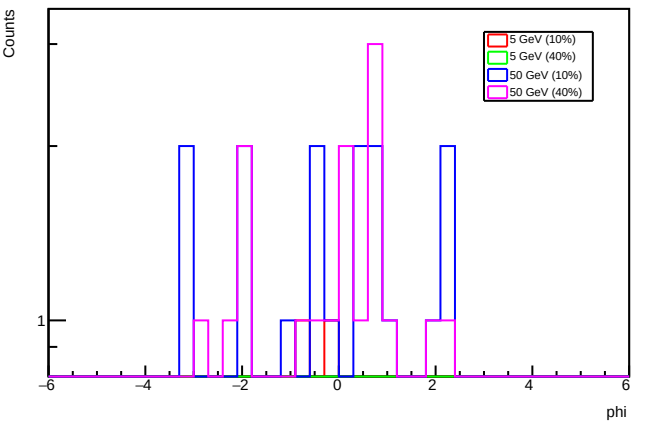

gen subleading Mu phi: n_jet >=1, j1pt > 30 GeV



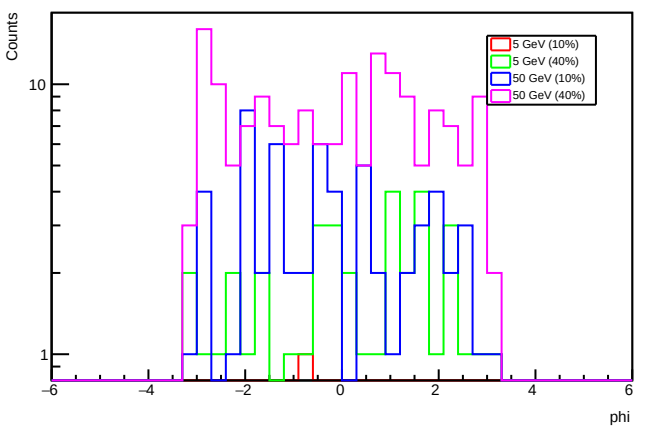

gen subleading Mu phi: MET > 120 GeV



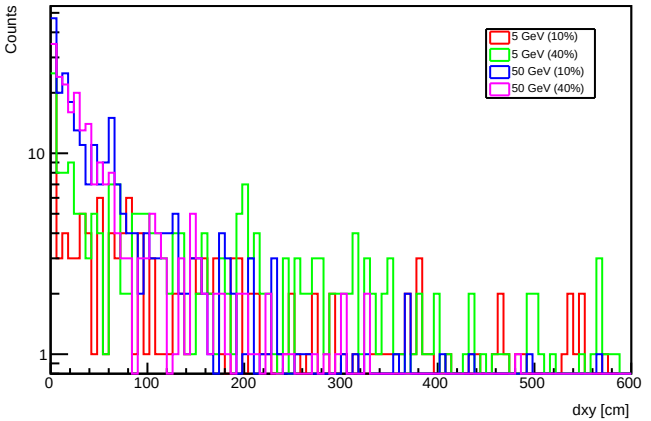

gen subleading Mu phi: j1pt >120, at most 2 jets w/ pt >30 GeV



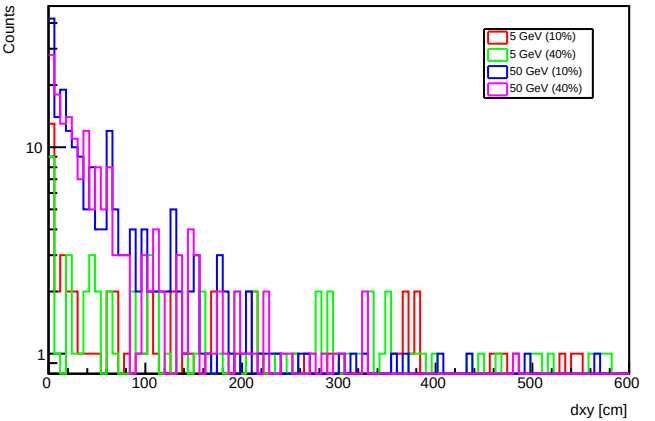

gen subleading Mu phi: at least 2 mu w/ pt ? 2 GeV and eta<2.5



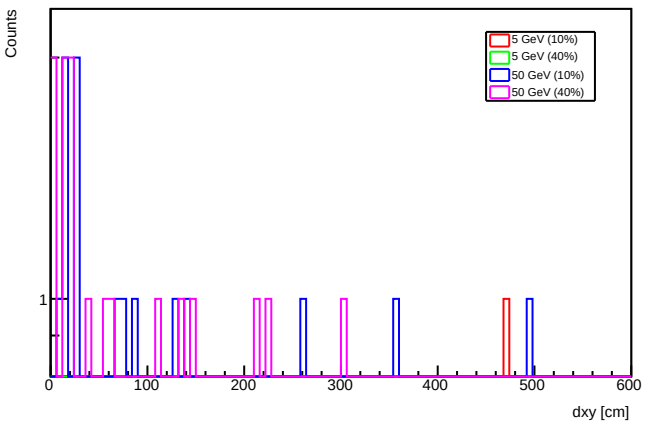
gen subleading Mu vxy: no cuts



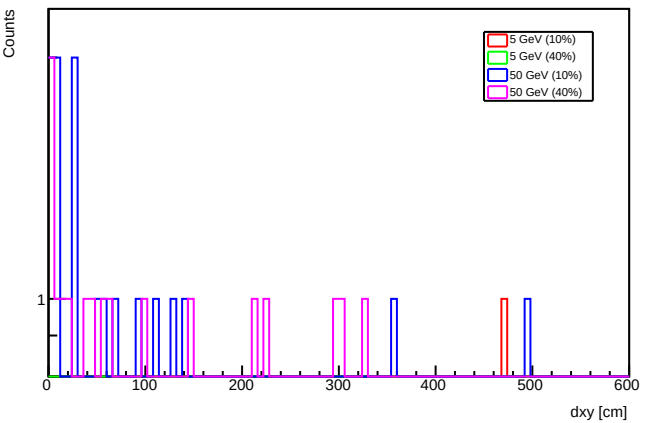

gen subleading Mu vxy: n_jet >=1, j1pt > 30 GeV



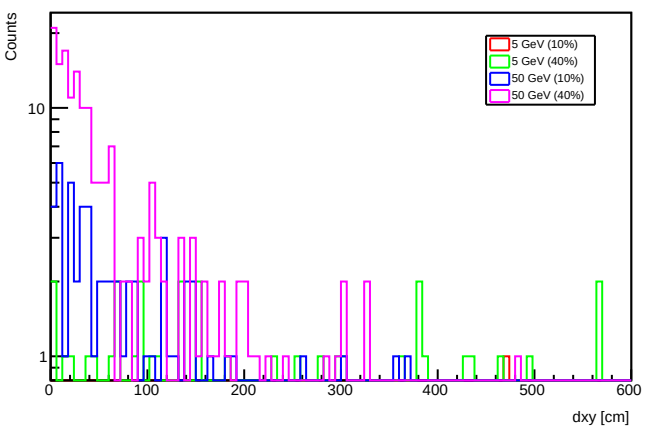

gen subleading Mu vxy: MET > 120 GeV



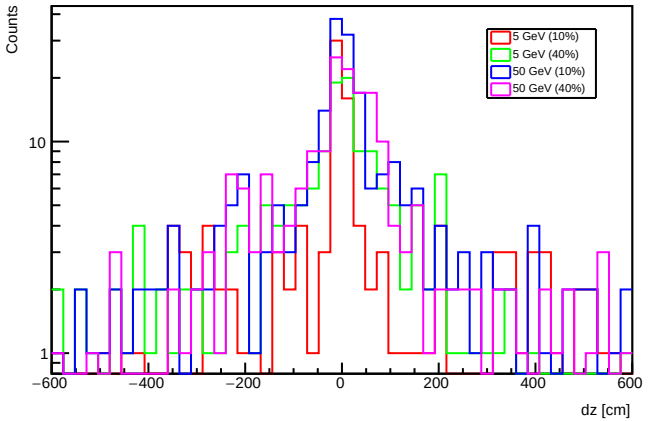

gen subleading Mu vxy: j1pt >120, at most 2 jets w/ pt >30 GeV



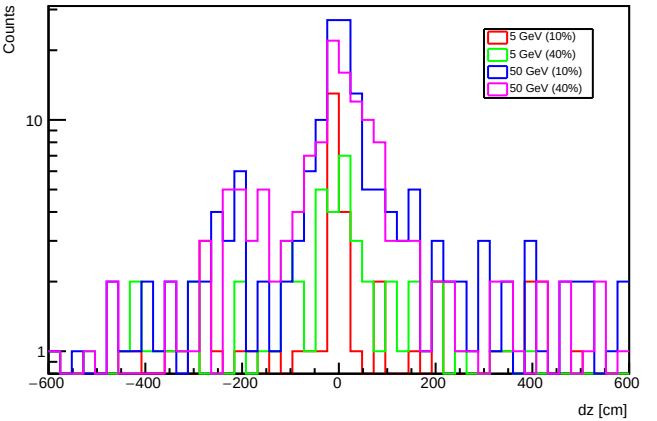

gen subleading Mu vxy: at least 2 mu w/ pt ? 2 GeV and eta<2.5



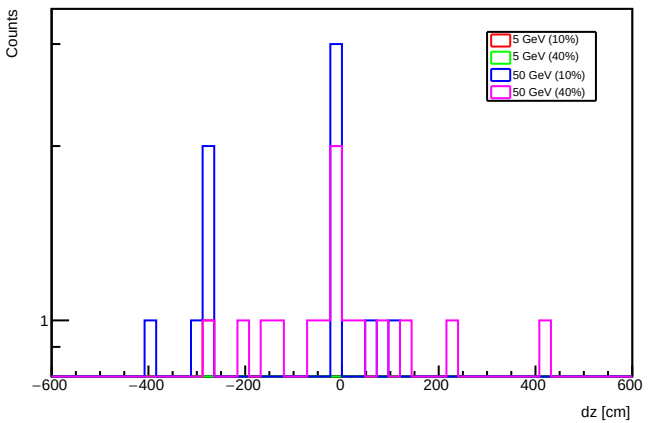
gen subleading Mu vz: no cuts



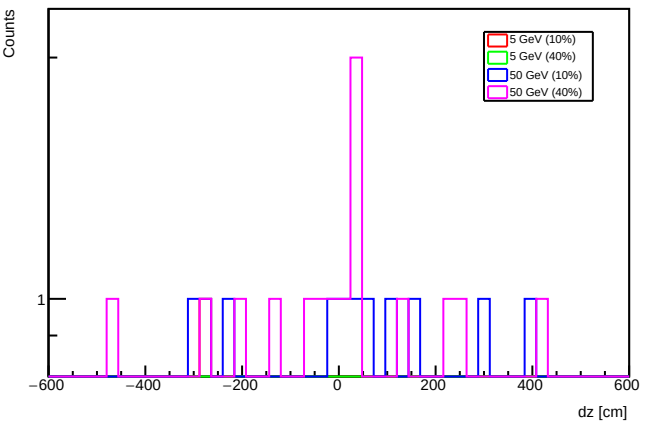

gen subleading Mu vz: n_jet >=1, j1pt > 30 GeV



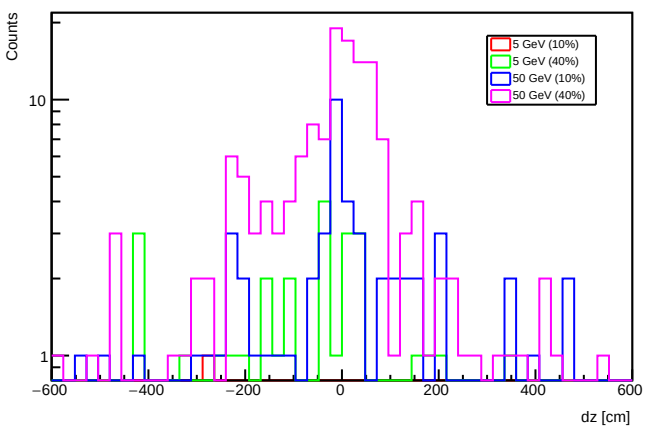

gen subleading Mu vz: MET > 120 GeV



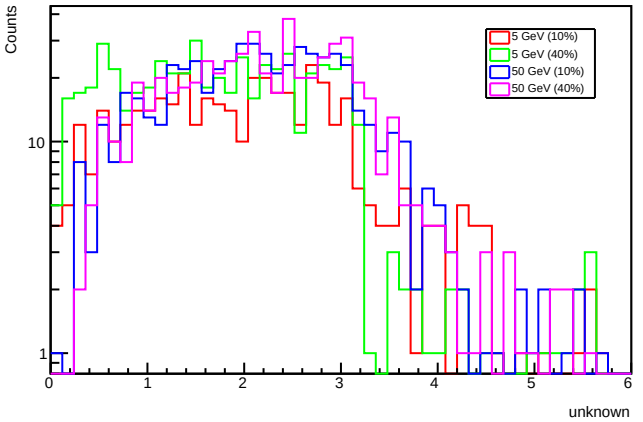

gen subleading Mu vz: j1pt >120, at most 2 jets w/ pt >30 GeV



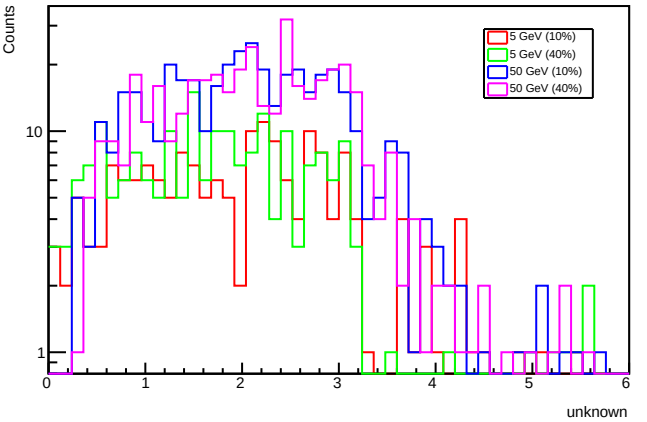

gen subleading Mu vz: at least 2 mu w/ pt ? 2 GeV and eta<2.5



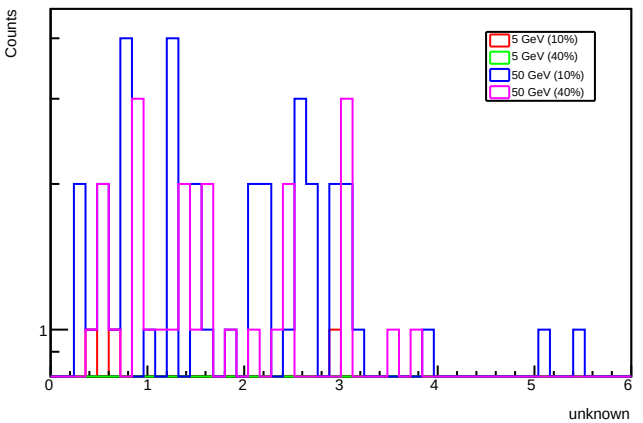
dR: gen leading mu and subleading mu: no cuts



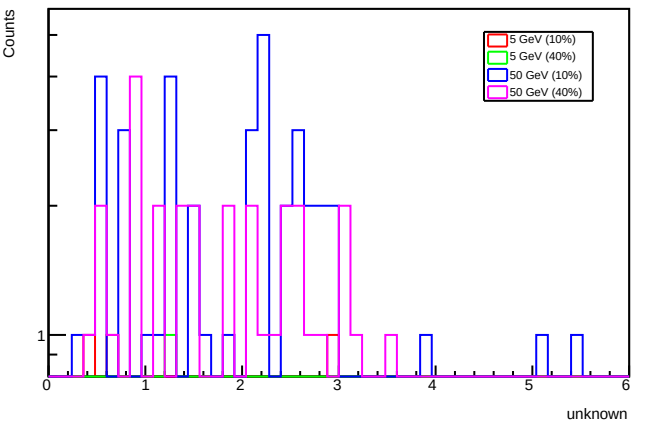

dR: gen leading mu and subleading mu: n_jet >=1, j1pt > 30 GeV



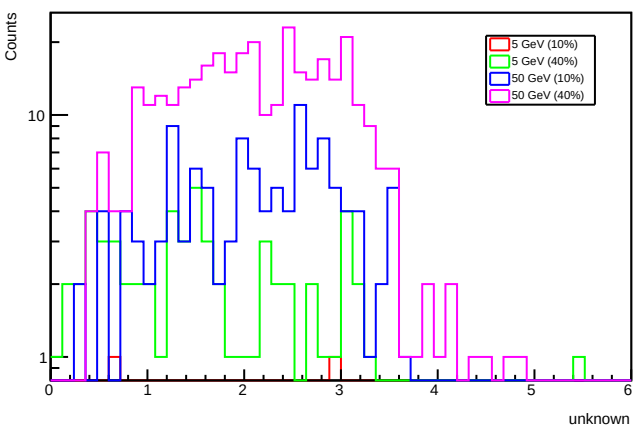

dR: gen leading mu and subleading mu: MET > 120 GeV



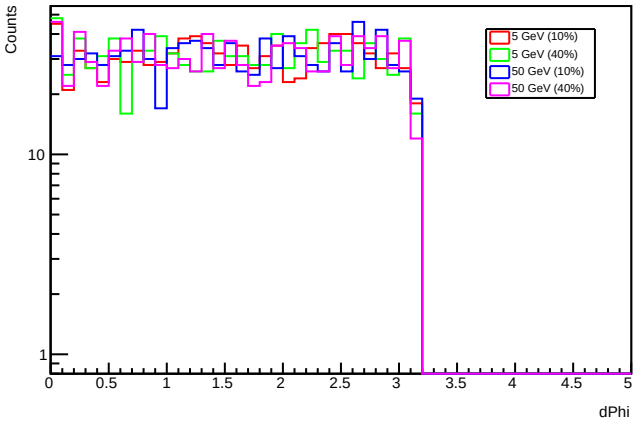

dR: gen leading mu and subleading mu: j1pt >120, at most 2 jets w/ pt >30 GeV



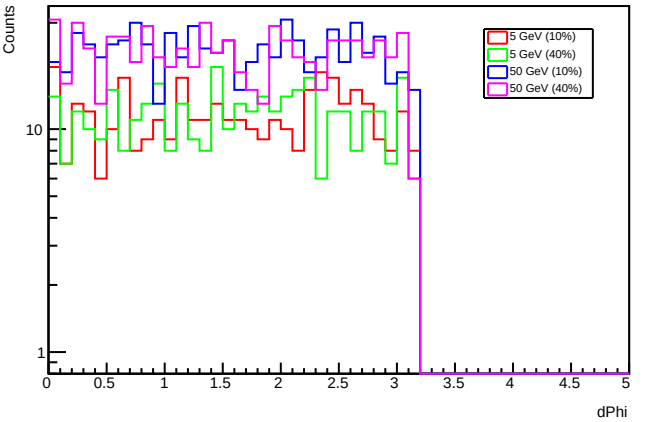

dR: gen leading mu and subleading mu: at least 2 mu w/ pt ? 2 GeV and eta<2.5



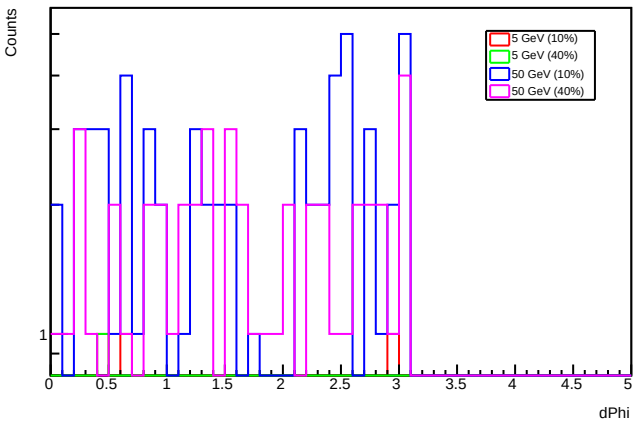
dPhi: gen MET and leading mu: no cuts



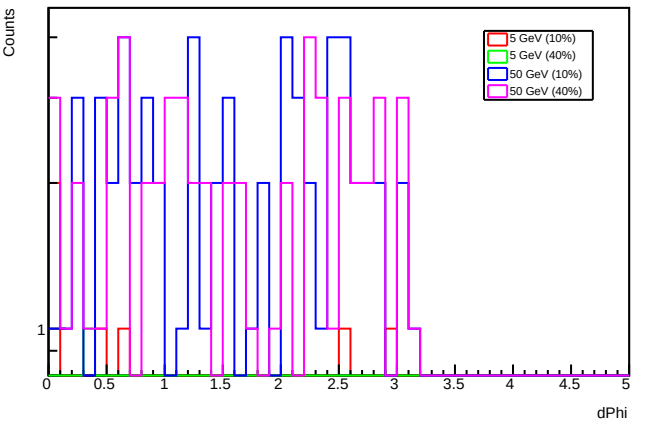

dPhi: gen MET and leading mu: n_jet >=1, j1pt > 30 GeV



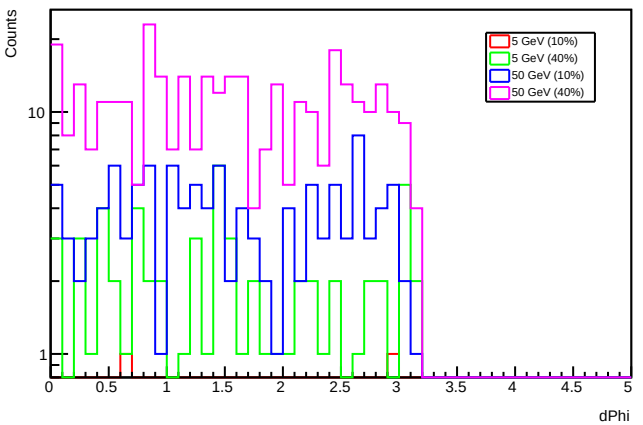

dPhi: gen MET and leading mu: MET > 120 GeV



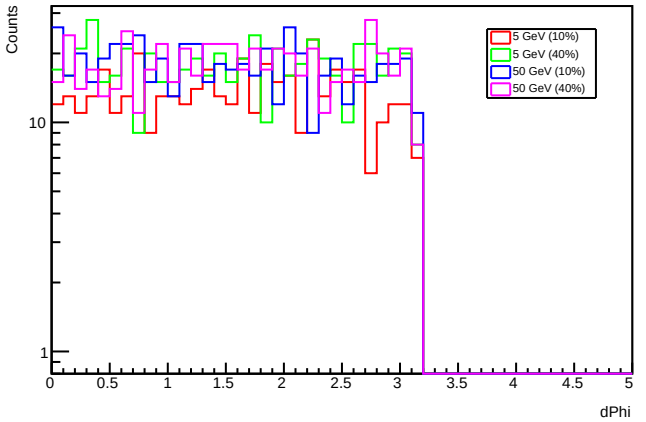

dPhi: gen MET and leading mu: j1pt >120, at most 2 jets w/ pt >30 GeV



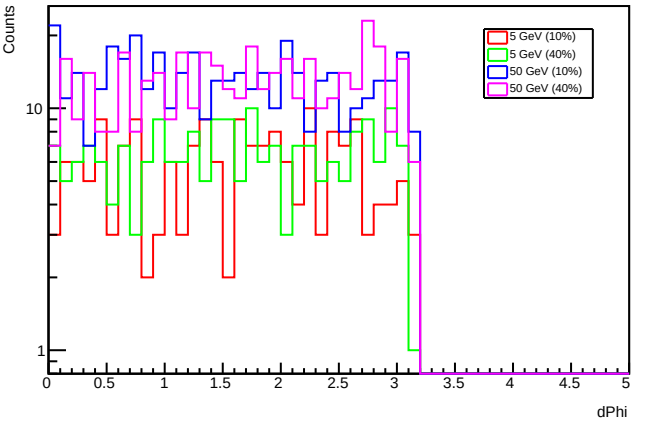

dPhi: gen MET and leading mu: at least 2 mu w/ pt ? 2 GeV and eta<2.5



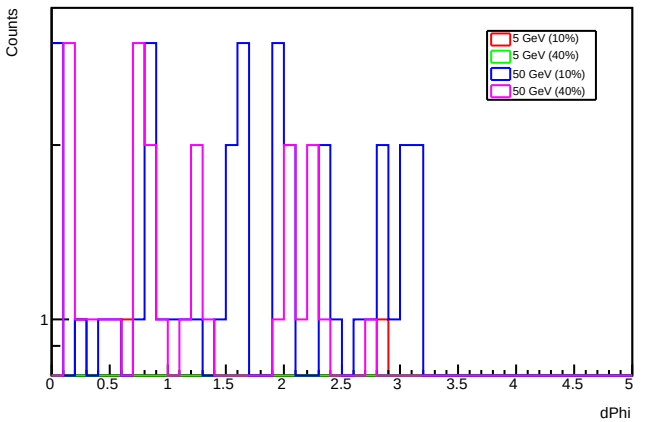
dPhi: gen leading mu and subleading mu: no cuts



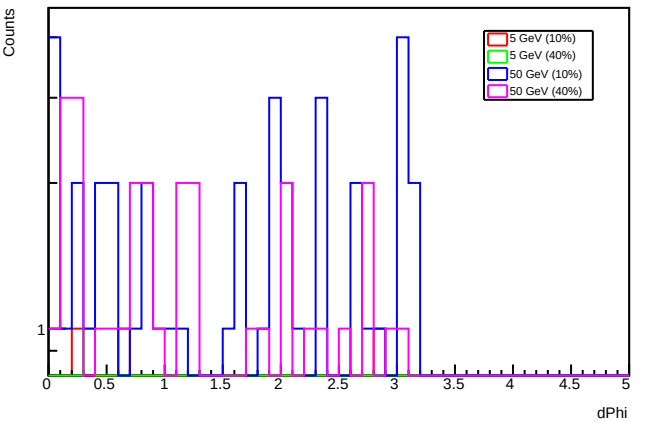

dPhi: gen leading mu and subleading mu: n_jet >=1, j1pt > 30 GeV



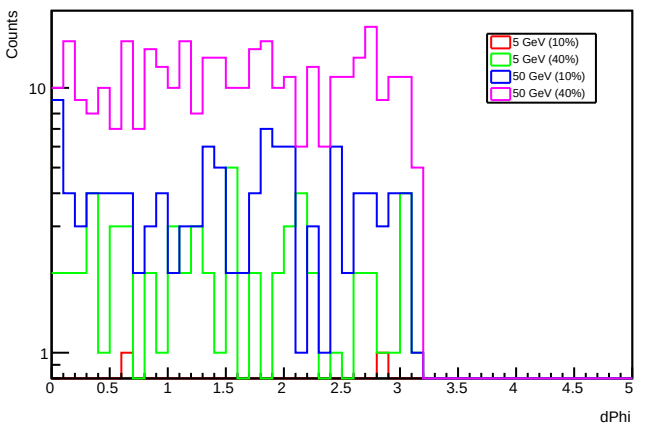

dPhi: gen leading mu and subleading mu: MET > 120 GeV



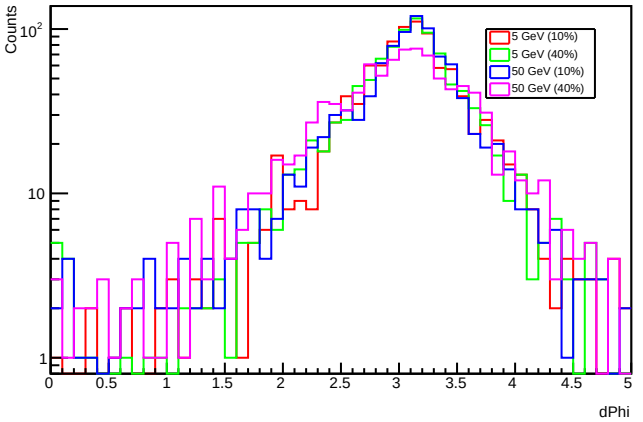

dPhi: gen leading mu and subleading mu: j1pt >120, at most 2 jets w/ pt >30 GeV



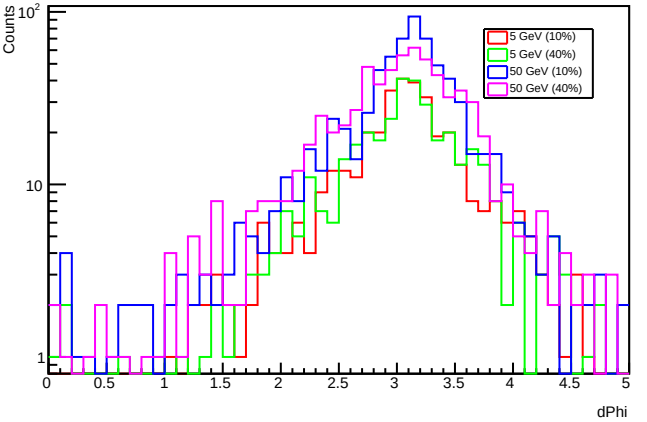

dPhi: gen leading mu and subleading mu: at least 2 mu w/ pt ? 2 GeV and eta<2.5



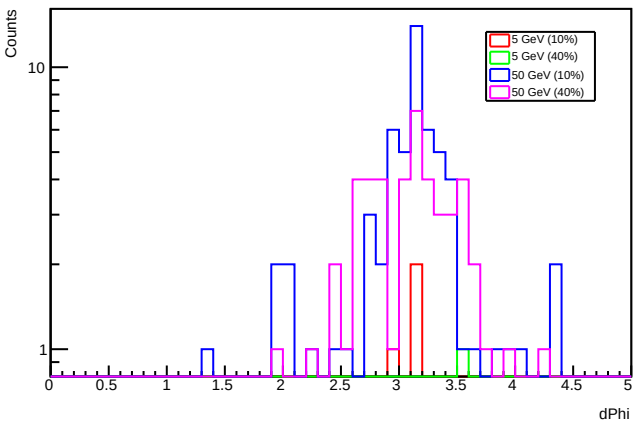
dPhi: gen MET and leading jet: no cuts



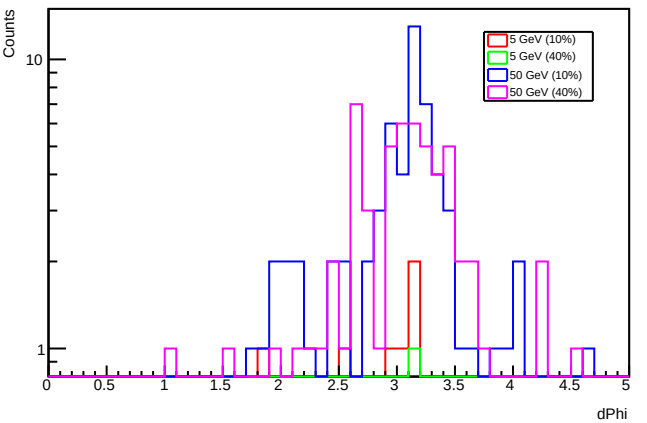

dPhi: gen MET and leading jet: n_jet >=1, j1pt > 30 GeV



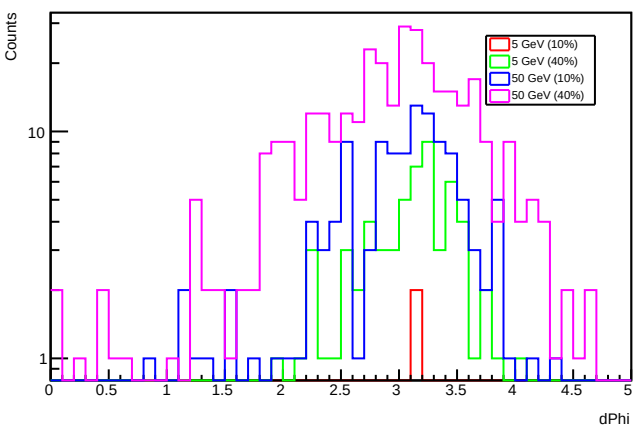

dPhi: gen MET and leading jet: MET > 120 GeV



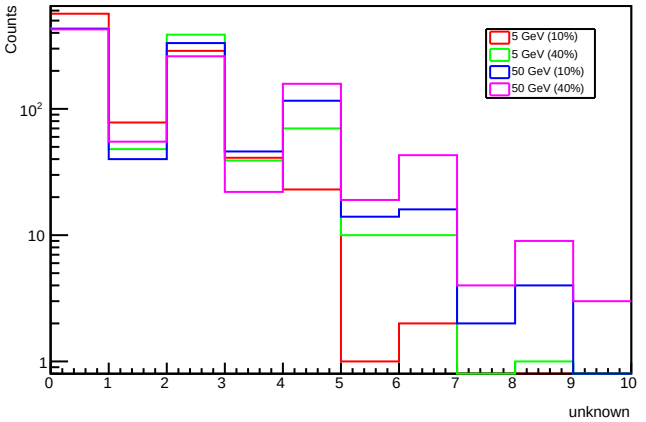

dPhi: gen MET and leading jet: j1pt >120, at most 2 jets w/ pt >30 GeV



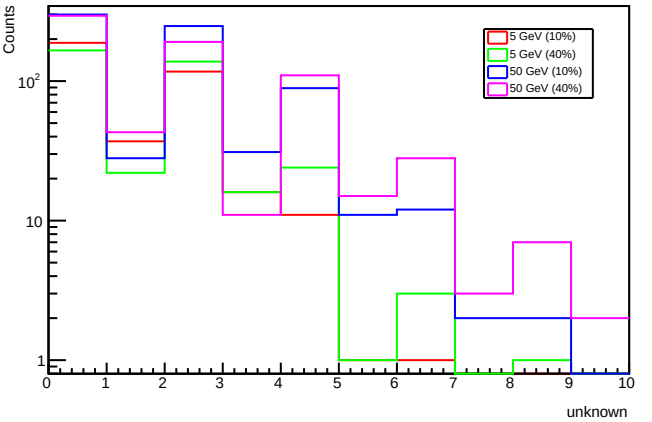

dPhi: gen MET and leading jet: at least 2 mu w/ pt ? 2 GeV and eta<2.5



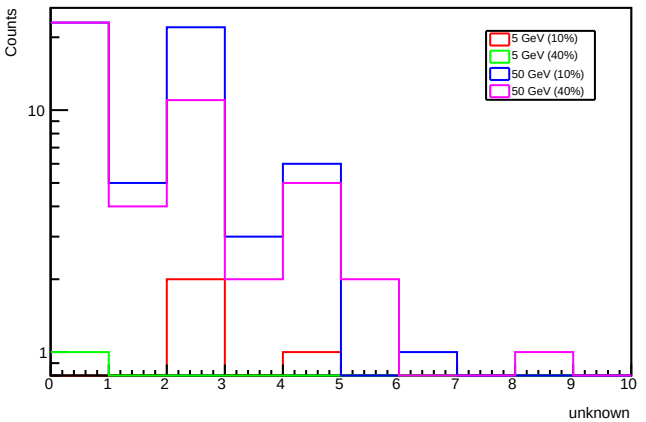
gen number of jets: no cuts



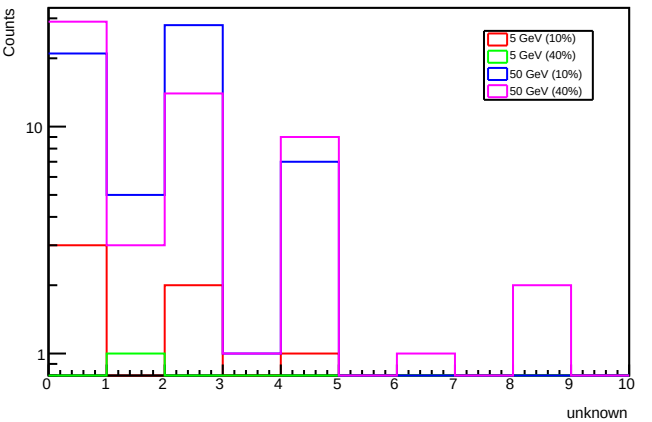

gen number of jets: n_jet >=1, j1pt > 30 GeV



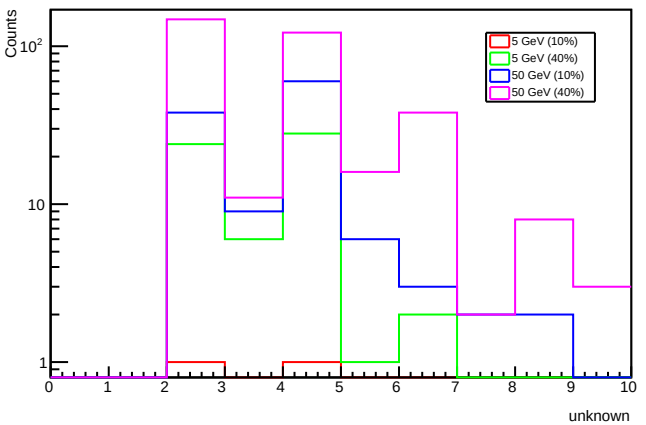

gen number of jets: MET > 120 GeV



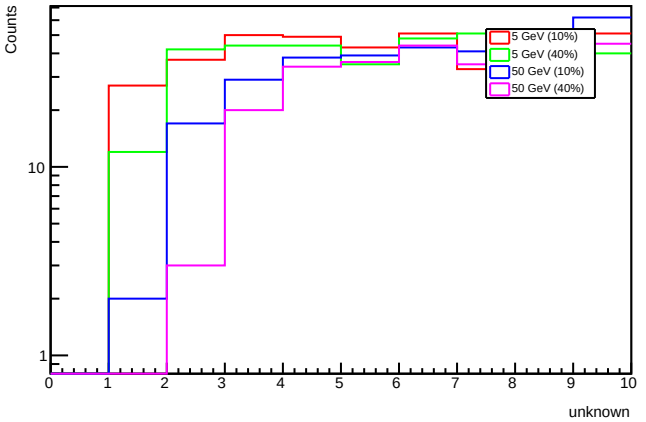

gen number of jets: j1pt >120, at most 2 jets w/ pt >30 GeV



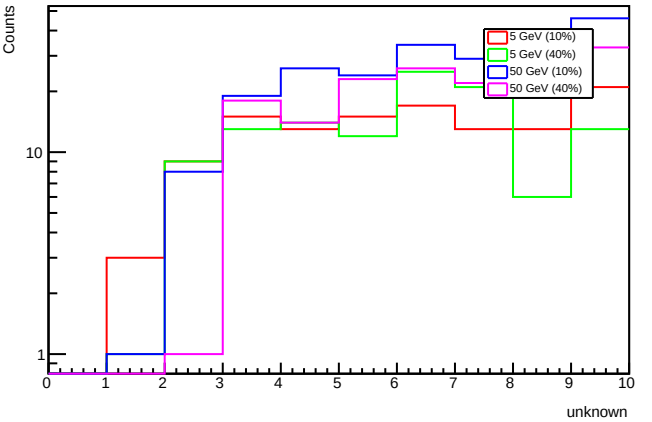

gen number of jets: at least 2 mu w/ pt ? 2 GeV and eta<2.5



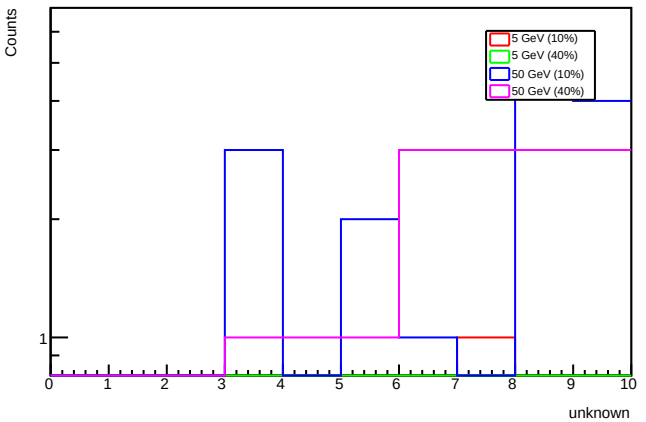
gen number of mu: no cuts



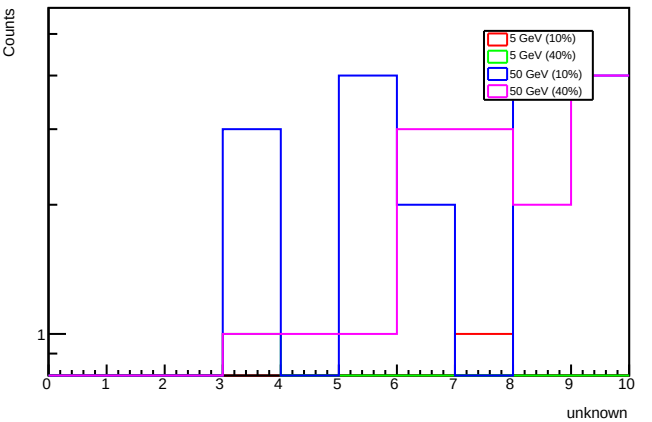

gen number of mu: n_jet >=1, j1pt > 30 GeV



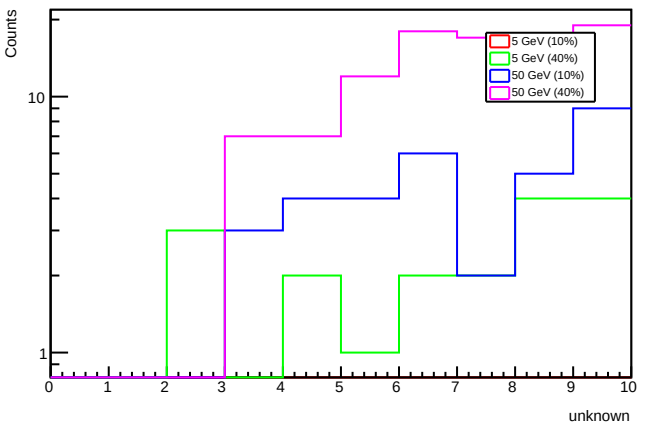

gen number of mu: MET > 120 GeV



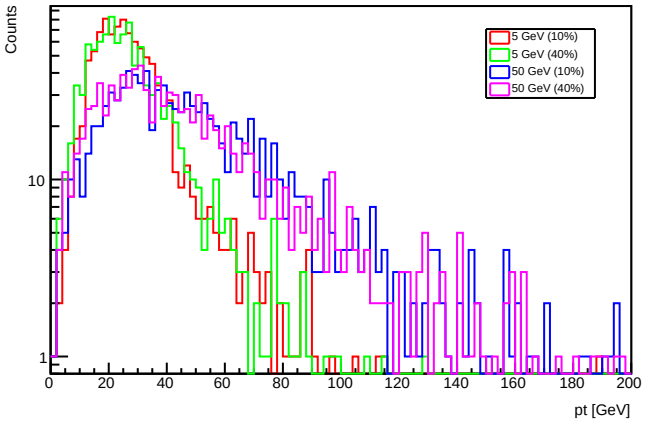

gen number of mu: j1pt >120, at most 2 jets w/ pt >30 GeV



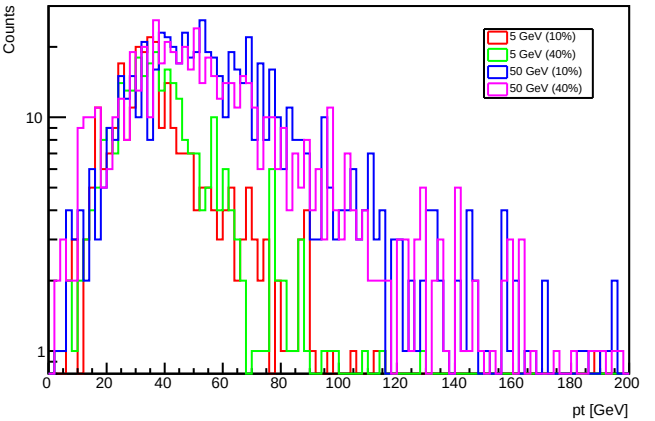

gen number of mu: at least 2 mu w/ pt ? 2 GeV and eta<2.5



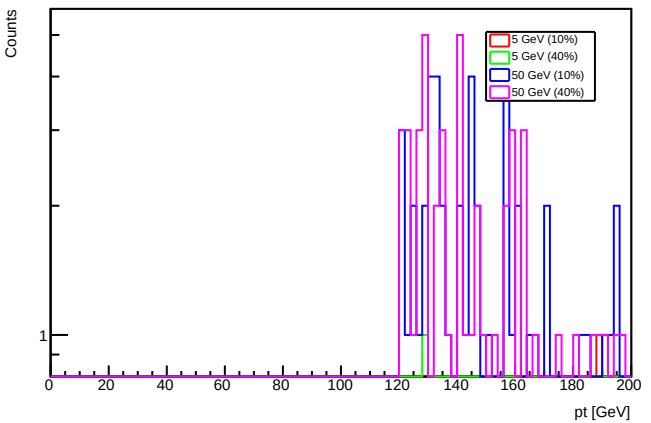
reco leading MET: no cuts



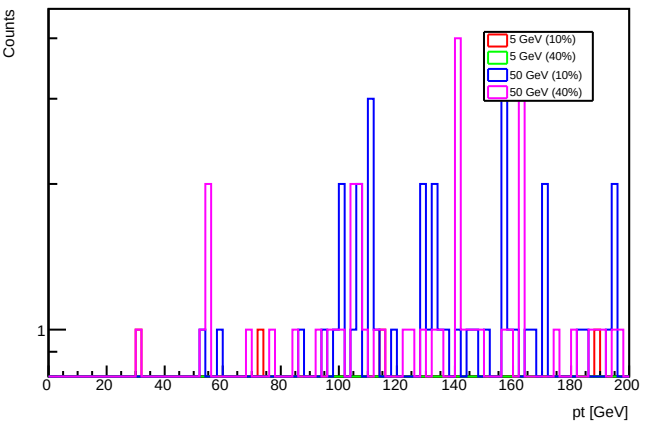

reco leading MET: n_jet >=1, j1pt > 30 GeV



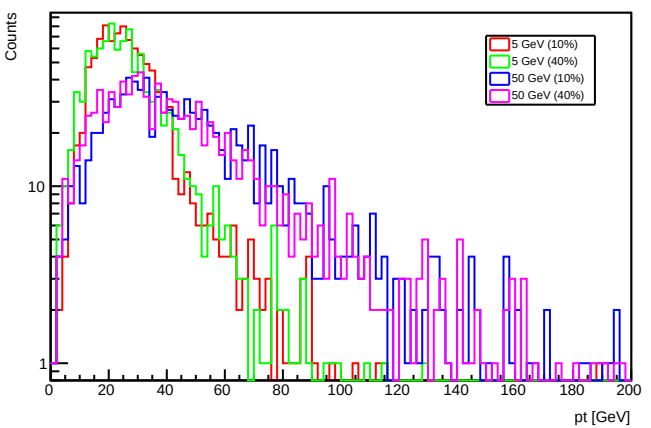

reco leading MET: MET > 120 GeV



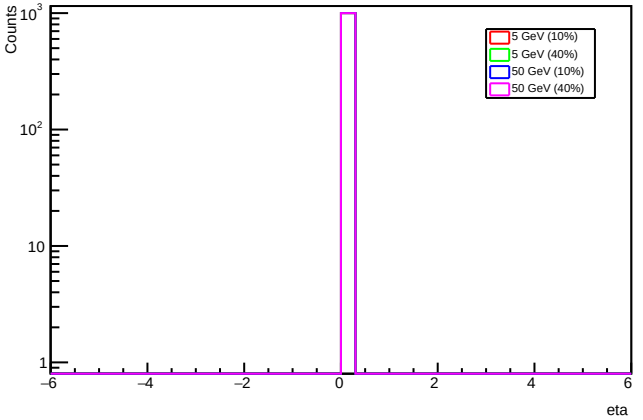

reco leading MET: j1pt >120, at most 2 jets w/ pt >30 GeV



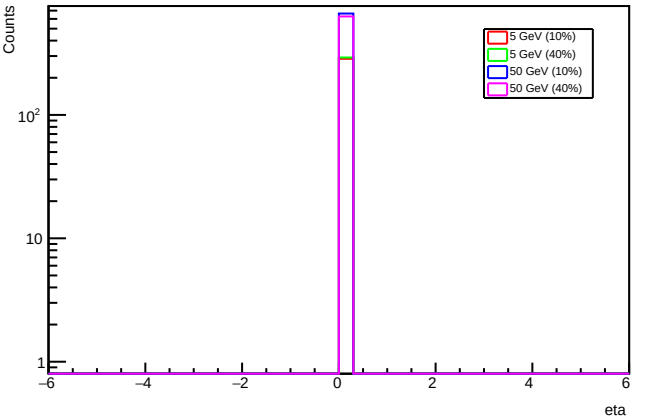

reco leading MET: at least 2 mu w/ pt ? 2 GeV and eta<2.5



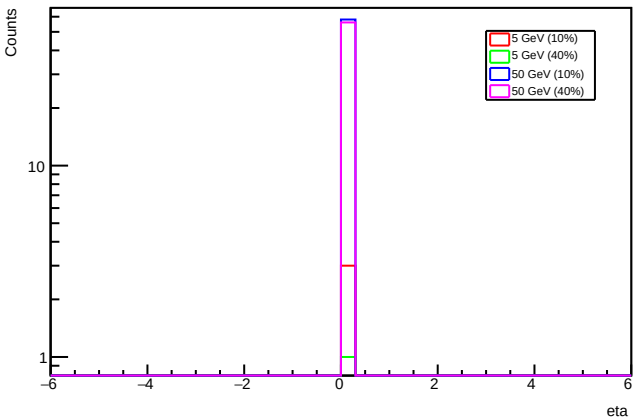
reco leading Met eta: no cuts



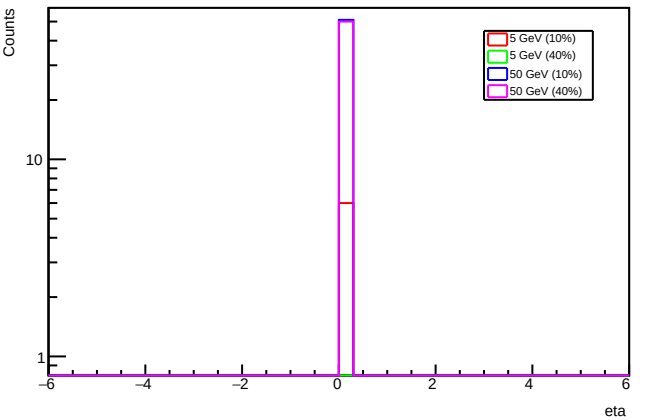

reco leading Met eta: n_jet >=1, j1pt > 30 GeV



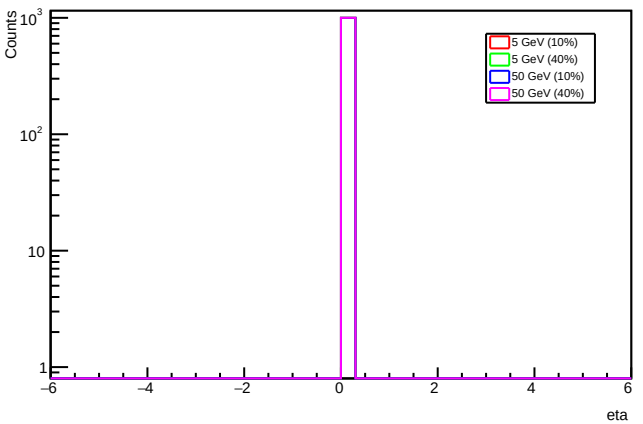

reco leading Met eta: MET > 120 GeV



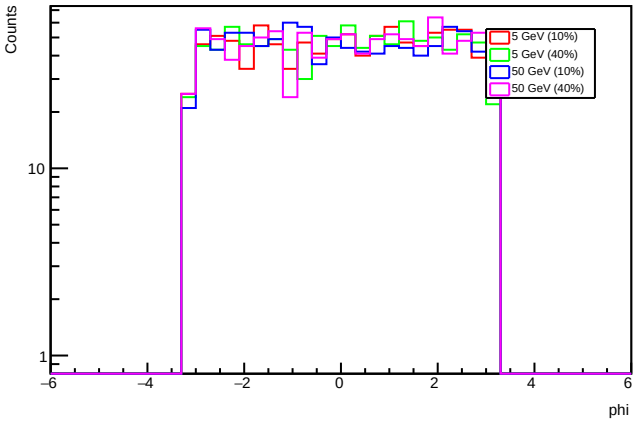

reco leading Met eta: j1pt >120, at most 2 jets w/ pt >30 GeV



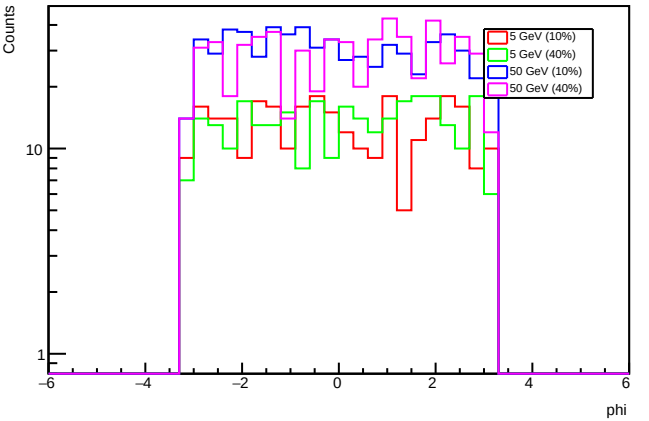

reco leading Met eta: at least 2 mu w/ pt ? 2 GeV and eta<2.5



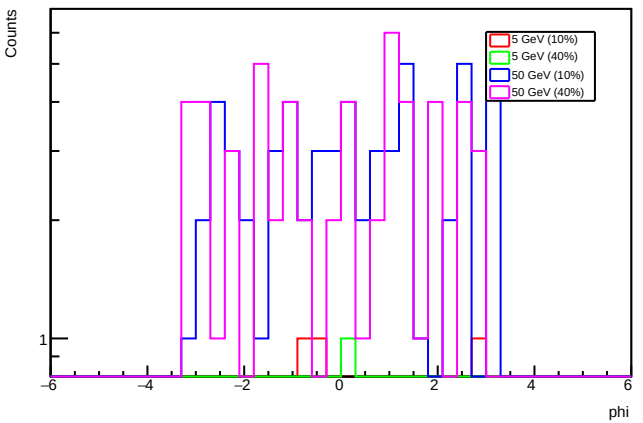
reco leading Met phi: no cuts



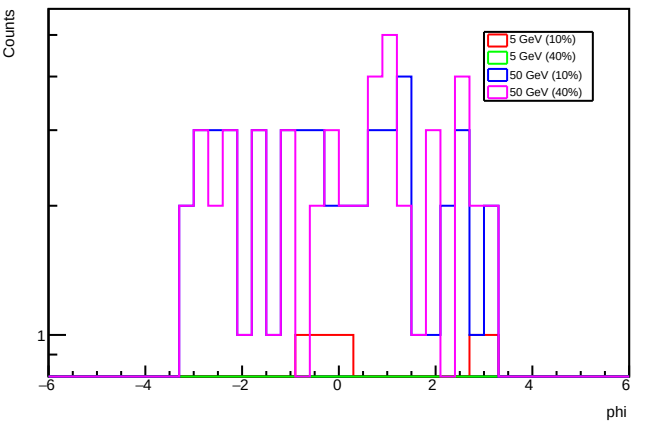

reco leading Met phi: n_jet >=1, j1pt > 30 GeV



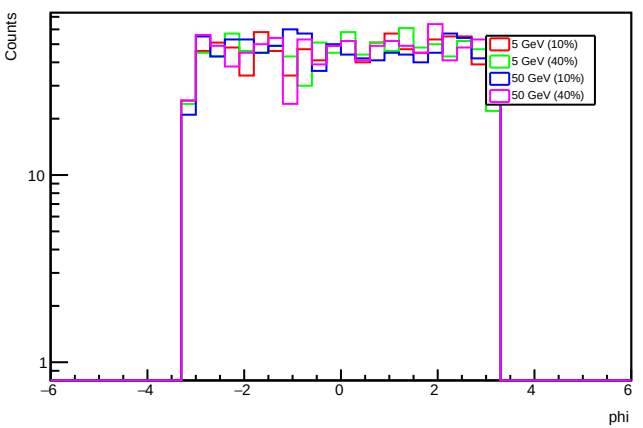

reco leading Met phi: MET > 120 GeV




reco leading Met phi: j1pt >120, at most 2 jets w/ pt >30 GeV




reco leading Met phi: at least 2 mu w/ pt ? 2 GeV and eta<2.5



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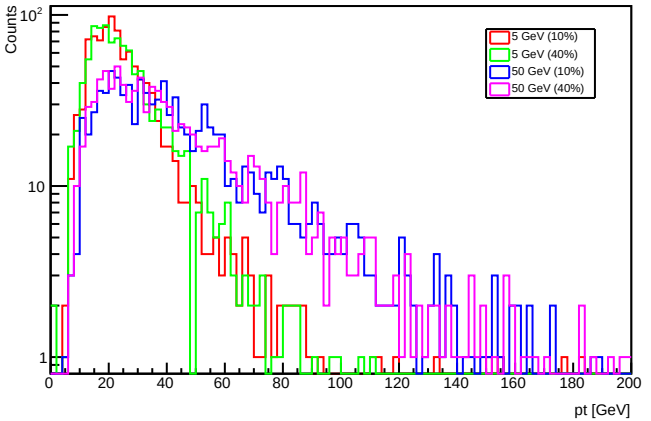
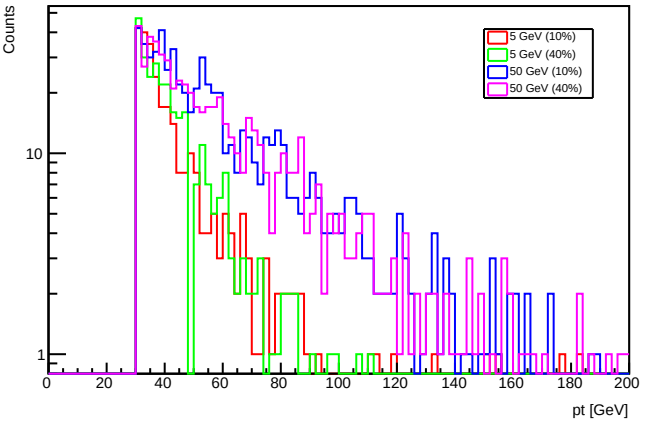
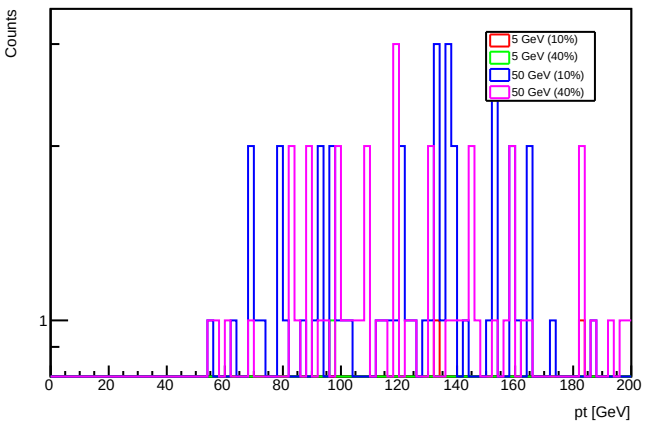


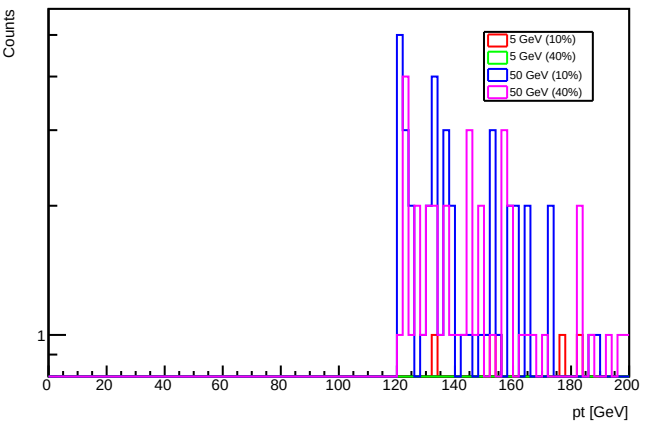

reco leading Jet pt: n_jet >=1, j1pt > 30 GeV



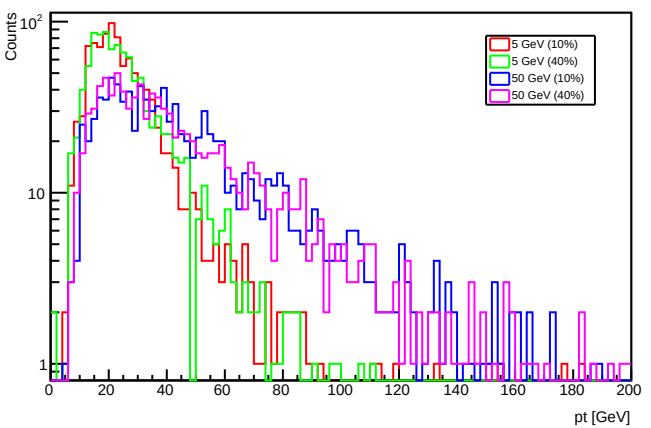

reco leading Jet pt: MET > 120 GeV



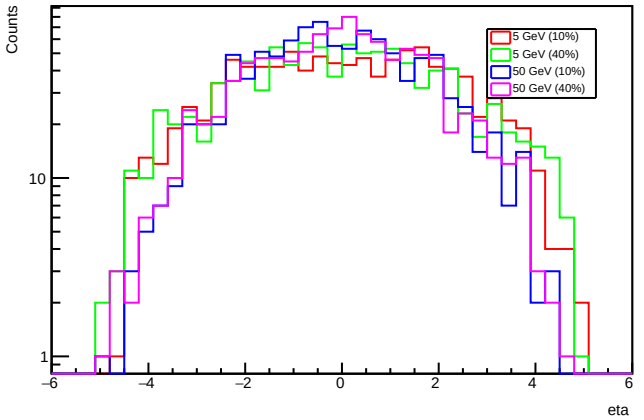

reco leading Jet pt: j1pt >120, at most 2 jets w/ pt >30 GeV



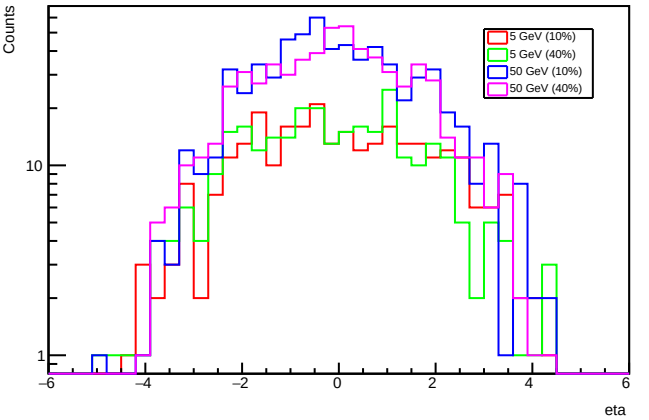

reco leading Jet pt: at least 2 mu w/ pt ? 2 GeV and eta<2.5



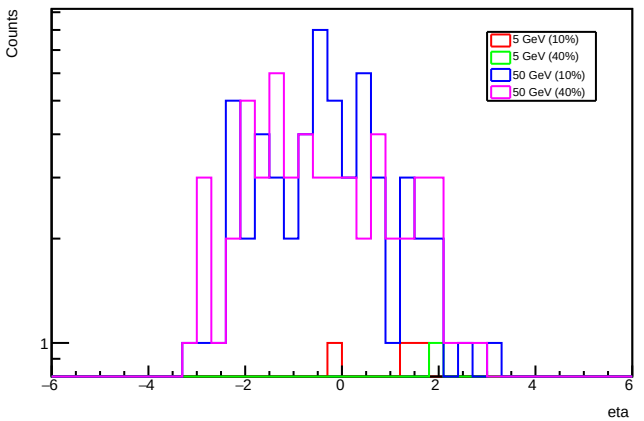
reco leading Jet eta: no cuts



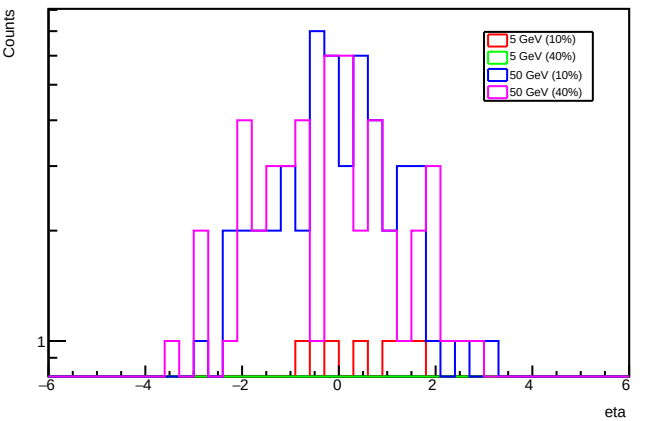

reco leading Jet eta: n_jet >=1, j1pt > 30 GeV



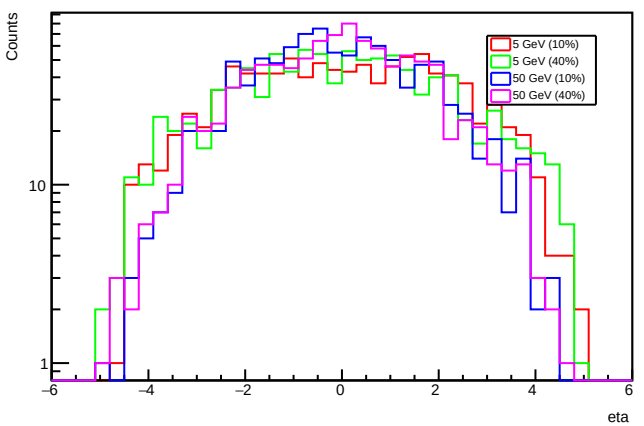

reco leading Jet eta: MET > 120 GeV



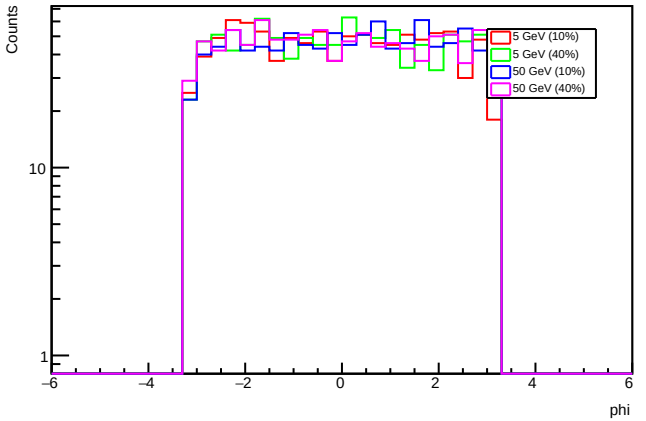

reco leading Jet eta: j1pt >120, at most 2 jets w/ pt >30 GeV



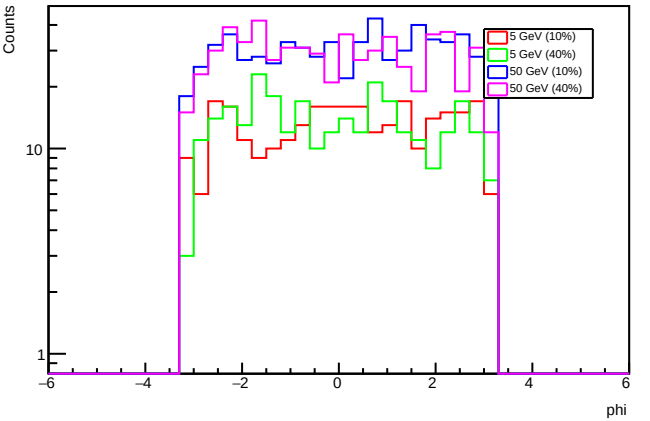

reco leading Jet eta: at least 2 mu w/ pt ? 2 GeV and eta<2.5



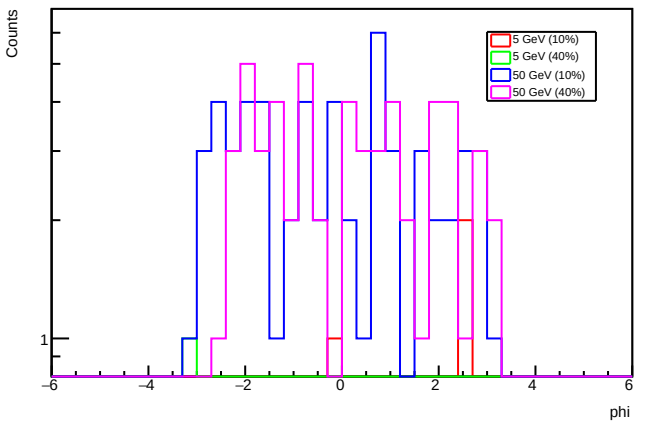
reco leading Jet phi: no cuts



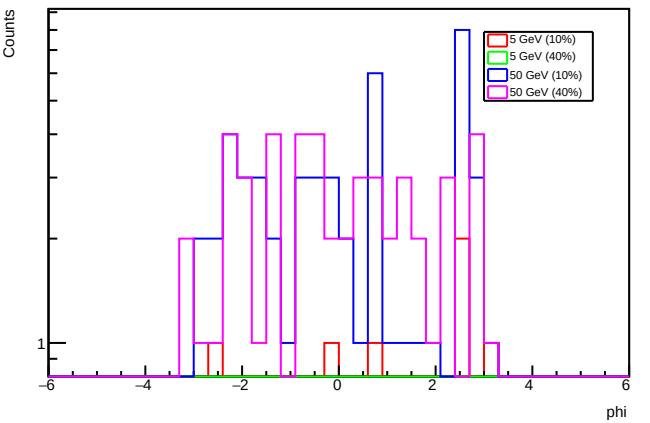

reco leading Jet phi: n_jet >=1, j1pt > 30 GeV



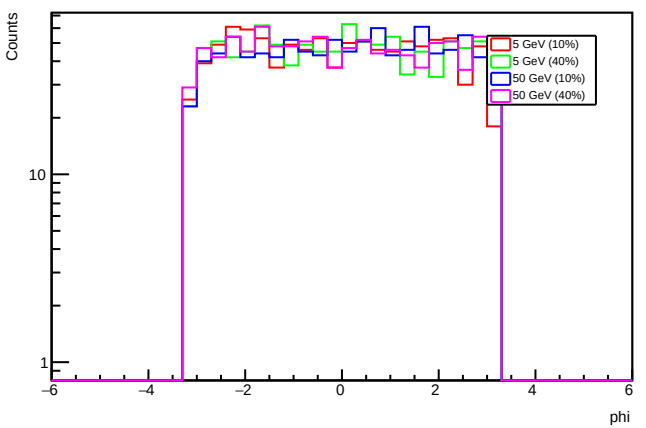

reco leading Jet phi: MET > 120 GeV



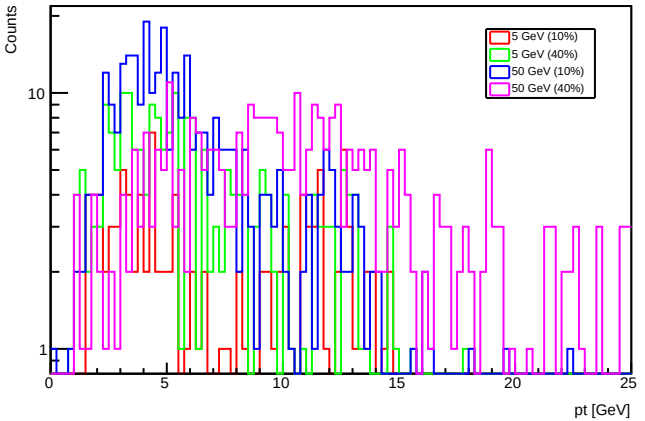

reco leading Jet phi: j1pt >120, at most 2 jets w/ pt >30 GeV



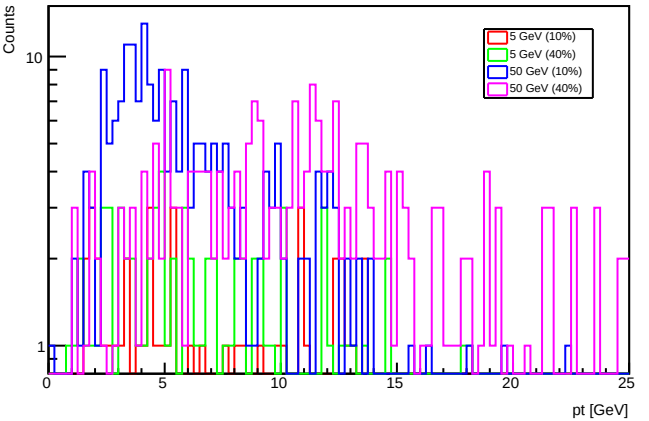

reco leading Jet phi: at least 2 mu w/ pt ? 2 GeV and eta<2.5



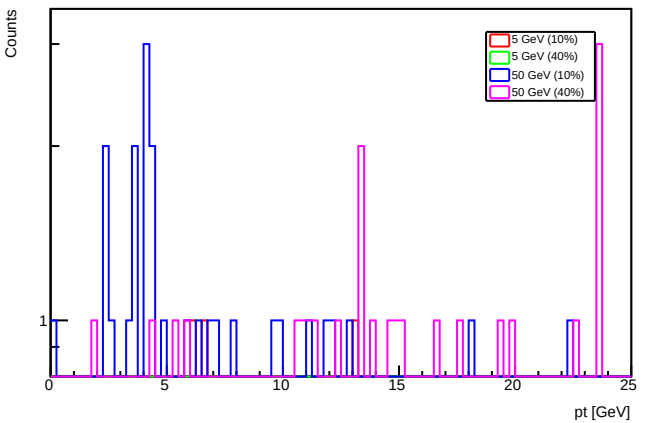
reco leading Mu pt: no cuts



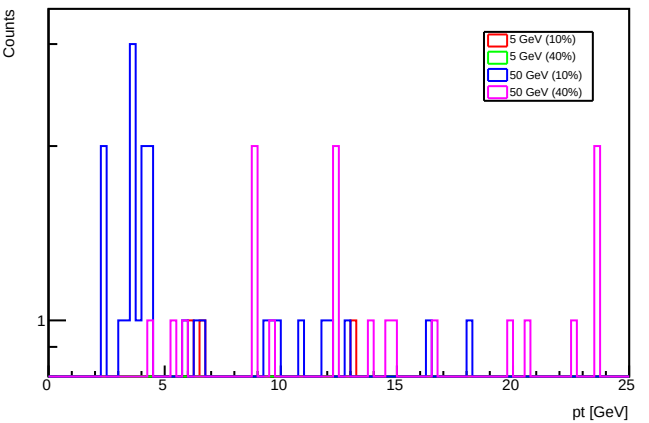

reco leading Mu pt: n_jet >=1, j1pt > 30 GeV



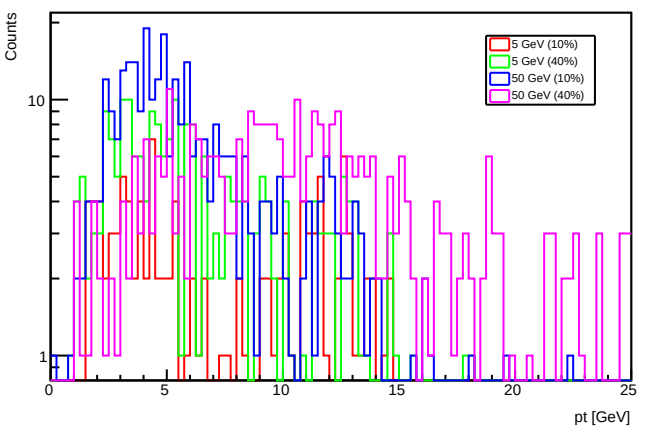

reco leading Mu pt: MET > 120 GeV



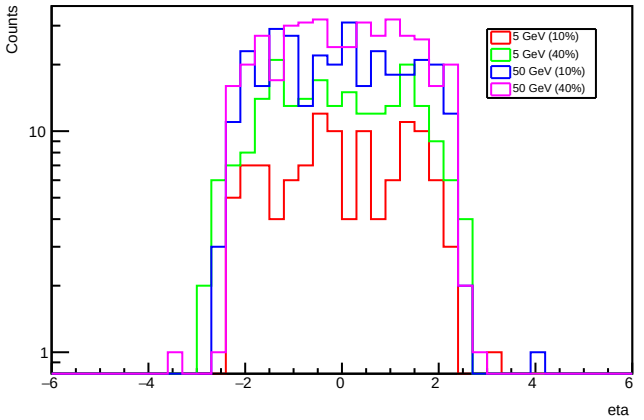

reco leading Mu pt: j1pt >120, at most 2 jets w/ pt >30 GeV



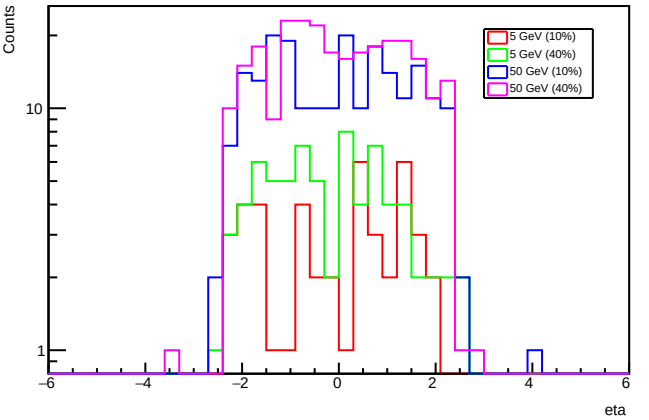

reco leading Mu pt: at least 2 mu w/ pt ? 2 GeV and eta<2.5



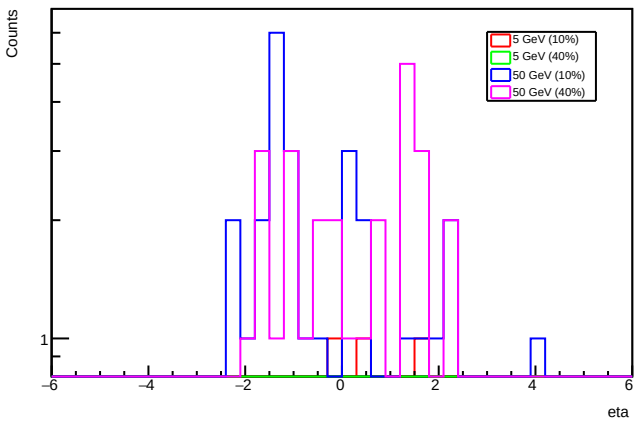
reco leading Mu eta: no cuts



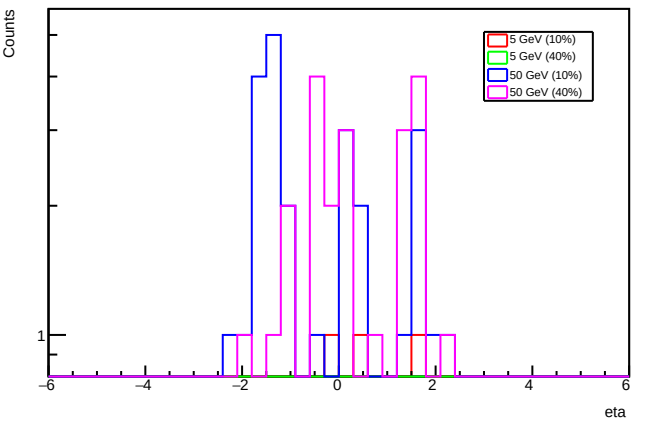

reco leading Mu eta: n_jet >=1, j1pt > 30 GeV



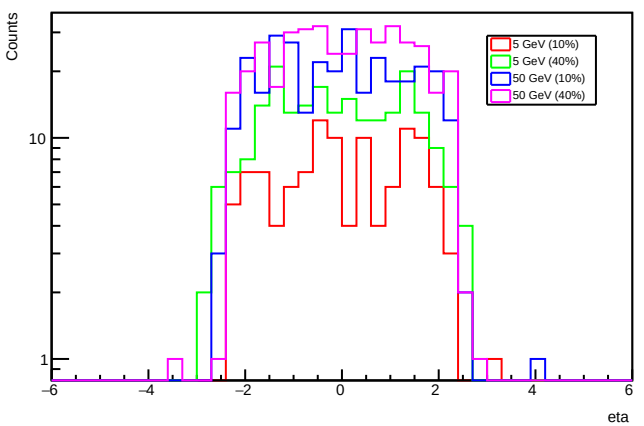

reco leading Mu eta: MET > 120 GeV



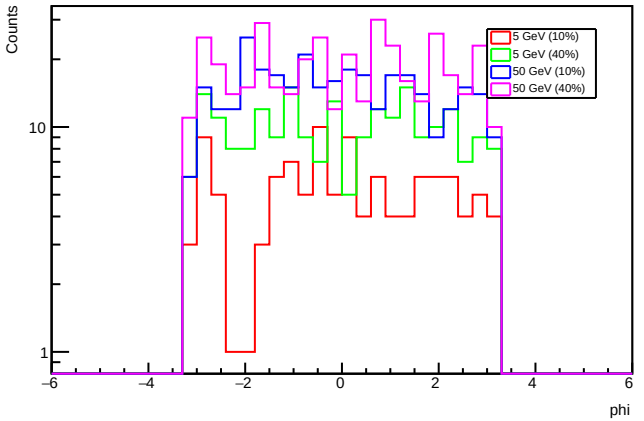

reco leading Mu eta: j1pt >120, at most 2 jets w/ pt >30 GeV



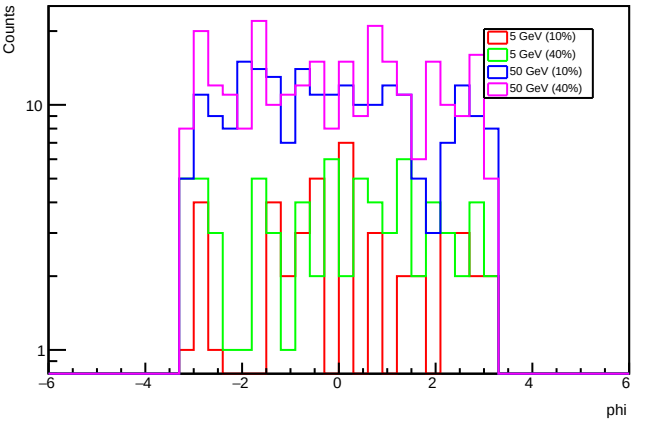

reco leading Mu eta: at least 2 mu w/ pt ? 2 GeV and eta<2.5



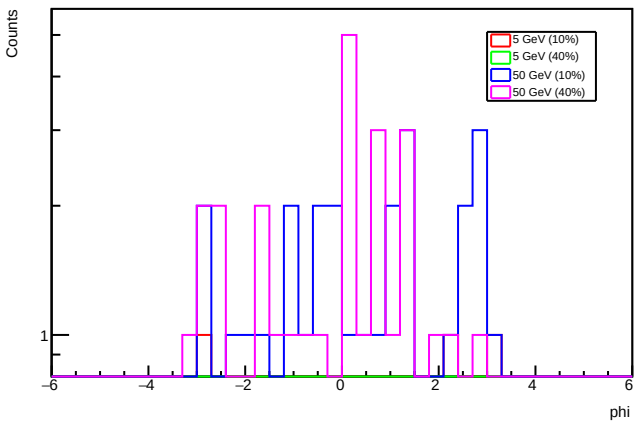
reco leading Mu phi: no cuts



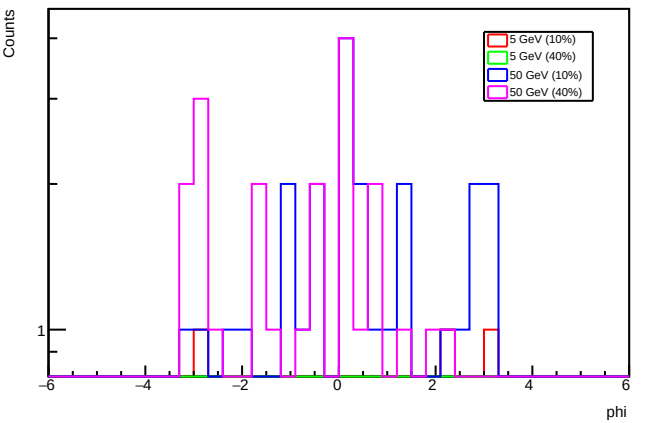

reco leading Mu phi: n_jet >=1, j1pt > 30 GeV



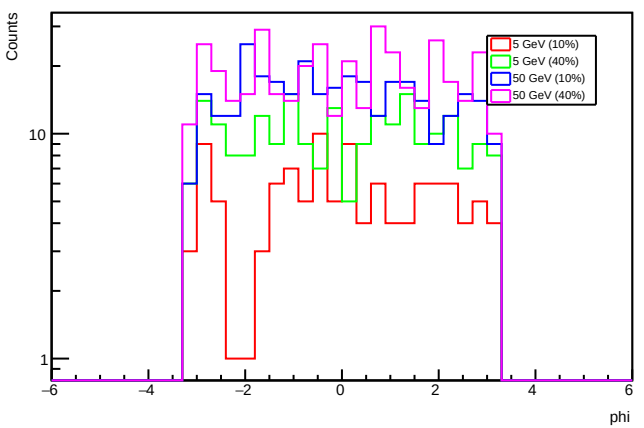

reco leading Mu phi: MET > 120 GeV



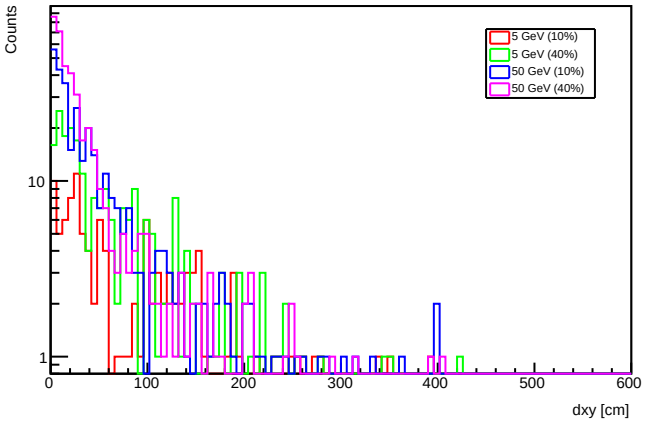

reco leading Mu phi: j1pt >120, at most 2 jets w/ pt >30 GeV



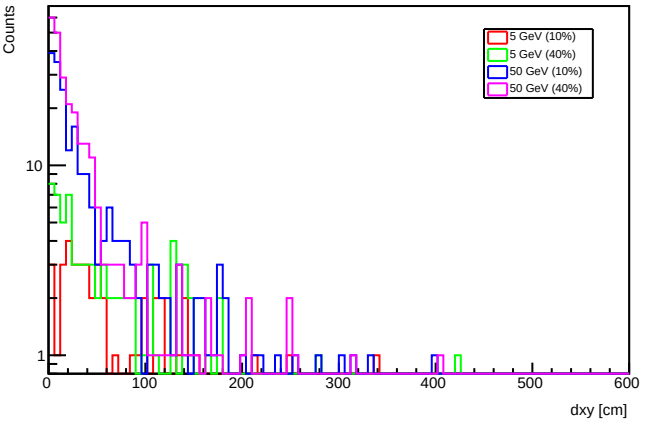

reco leading Mu phi: at least 2 mu w/ pt ? 2 GeV and eta<2.5



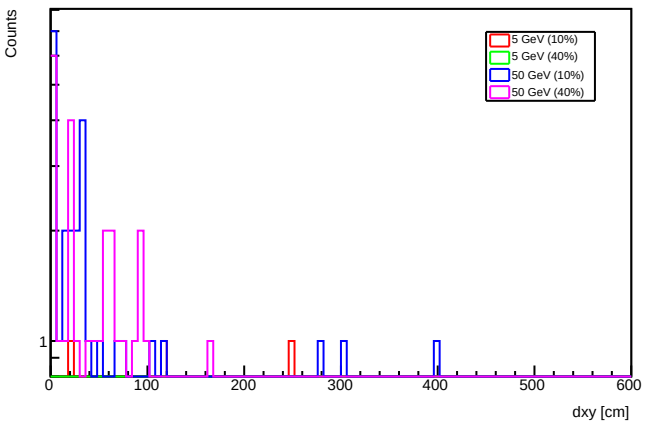
reco leading Mu vxy: no cuts



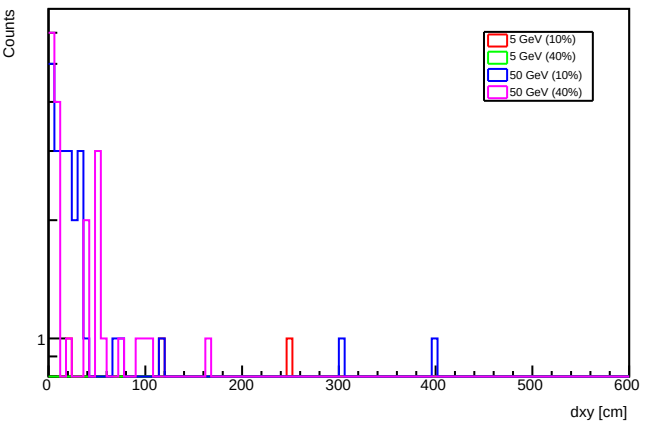

reco leading Mu vxy: n_jet >=1, j1pt > 30 GeV



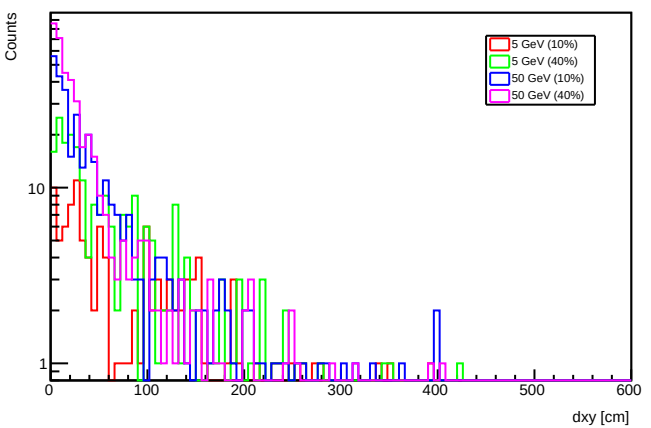

reco leading Mu vxy: MET > 120 GeV



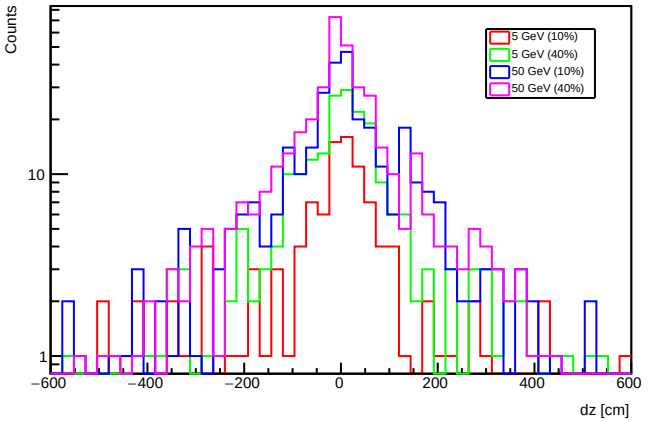

reco leading Mu vxy: j1pt >120, at most 2 jets w/ pt >30 GeV



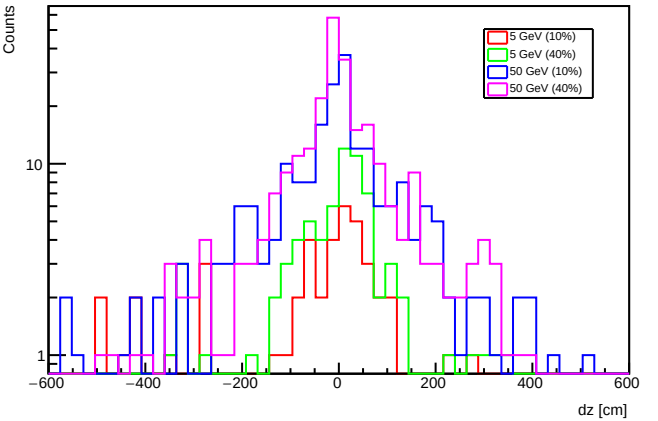

reco leading Mu vxy: at least 2 mu w/ pt ? 2 GeV and eta<2.5



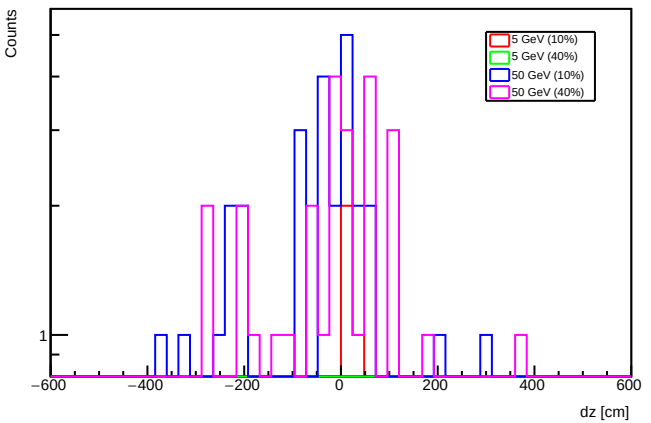
reco leading Mu vz: no cuts



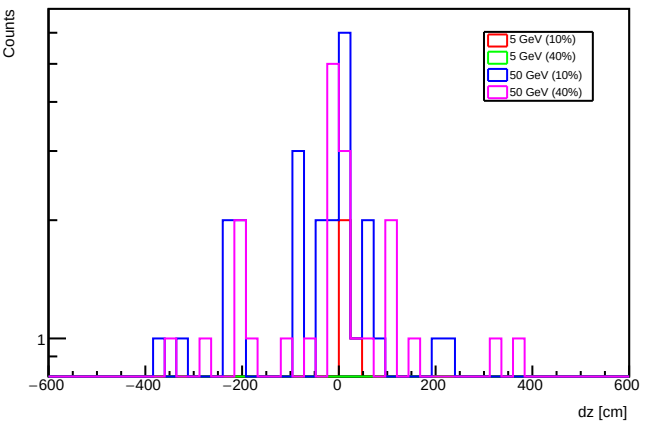

reco leading Mu vz: n_jet >=1, j1pt > 30 GeV



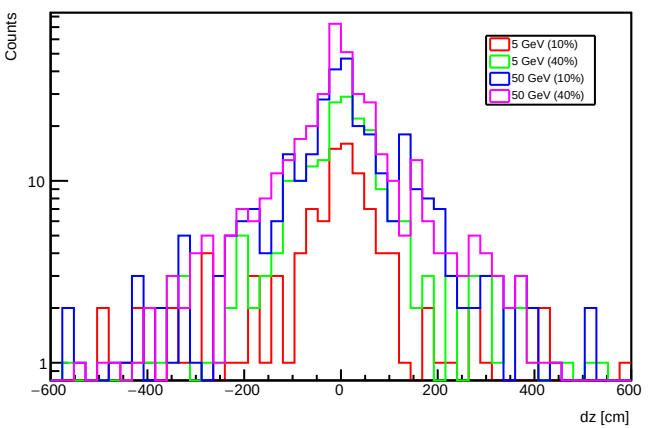

reco leading Mu vz: MET > 120 GeV



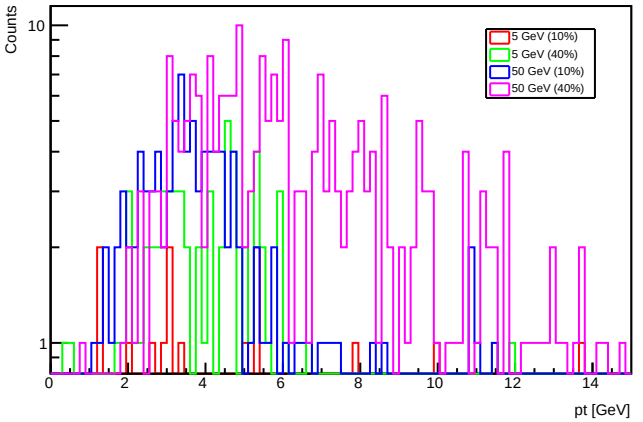

reco leading Mu vz: j1pt >120, at most 2 jets w/ pt >30 GeV




reco leading Mu vz: at least 2 mu w/ pt ? 2 GeV and eta<2.5



reco subleading Mu pt: no cuts

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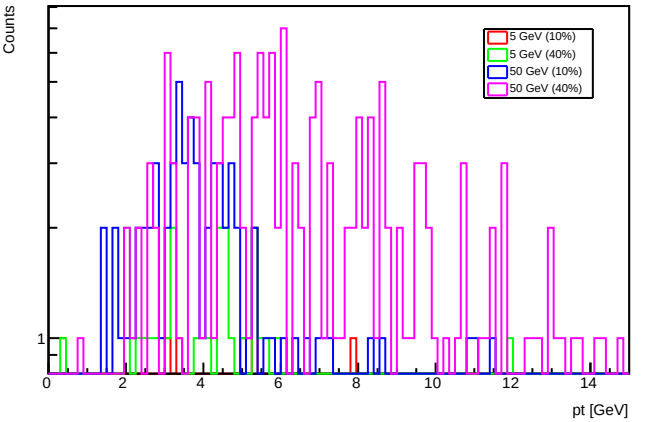
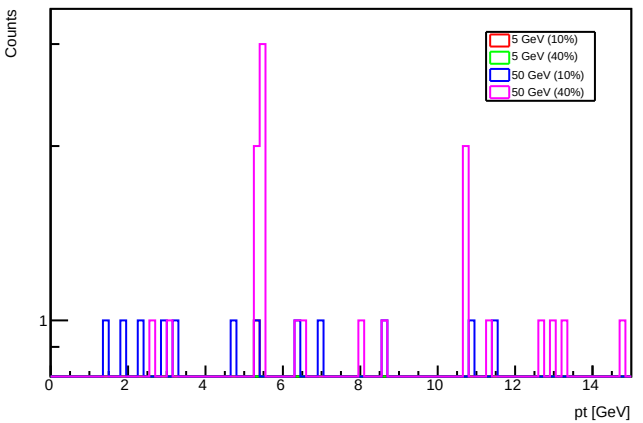
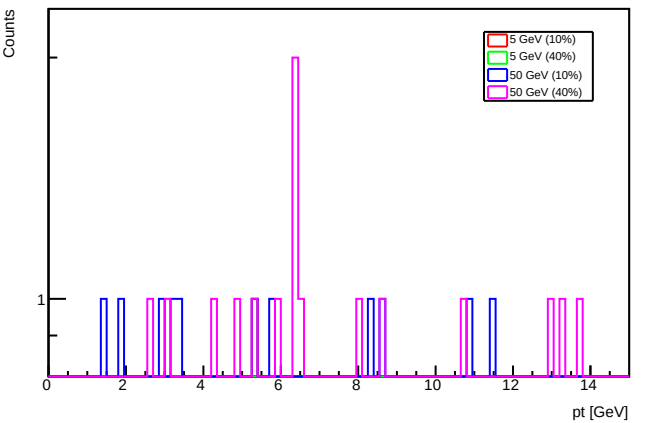


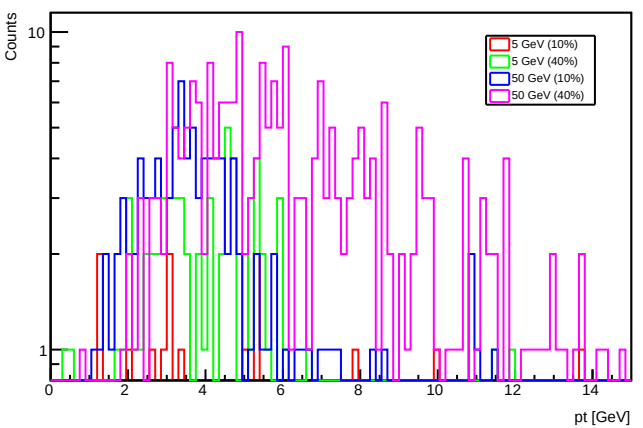

reco subleading Mu pt: MET > 120 GeV



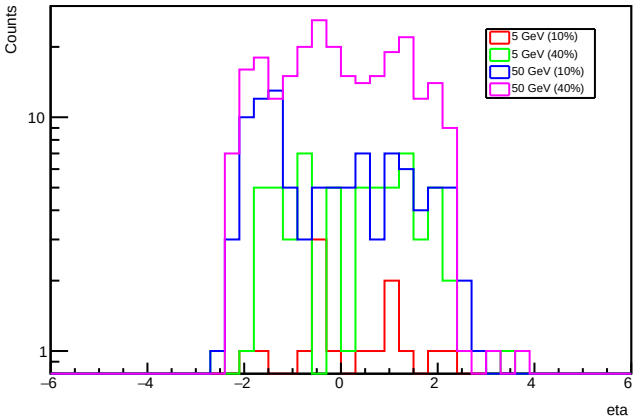

reco subleading Mu pt: j1pt >120, at most 2 jets w/ pt >30 GeV



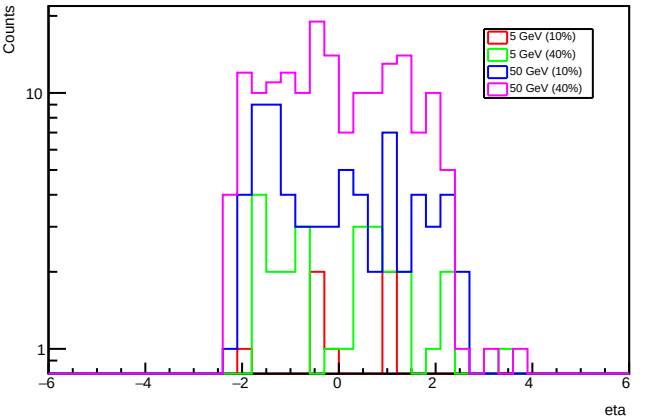

reco subleading Mu pt: at least 2 mu w/ pt ? 2 GeV and eta<2.5



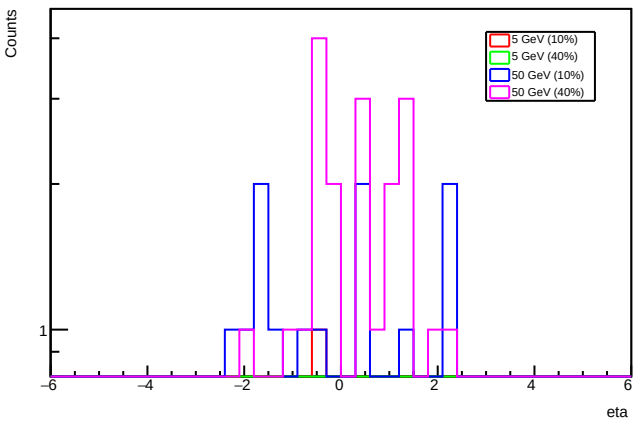
reco subleading Mu eta: no cuts



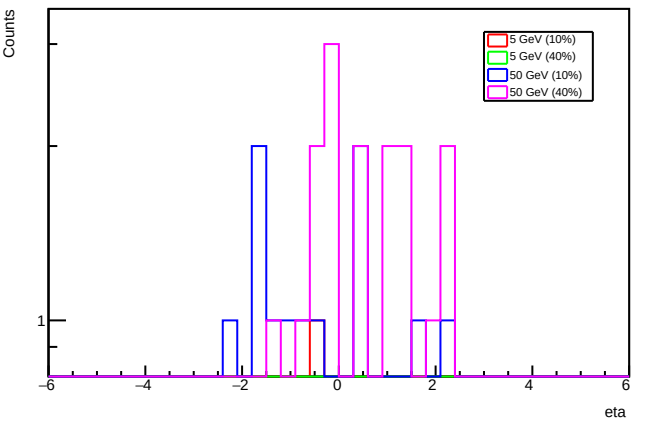

reco subleading Mu eta: n_jet >=1, j1pt > 30 GeV



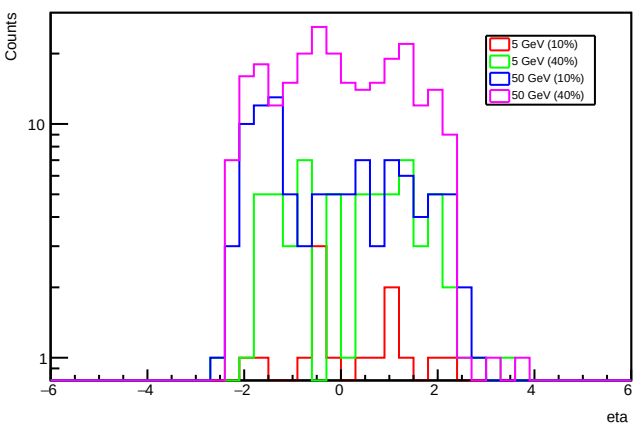

reco subleading Mu eta: MET > 120 GeV



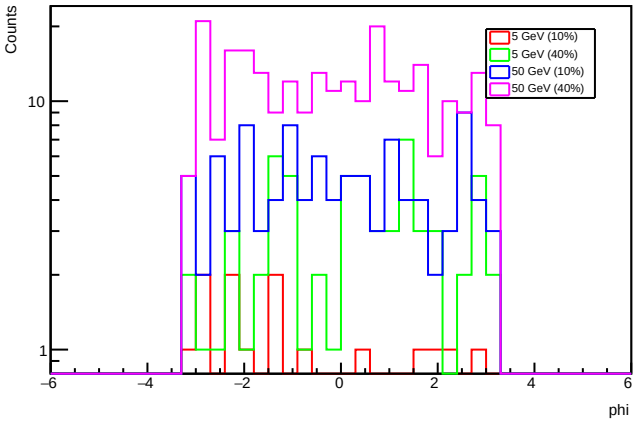

reco subleading Mu eta: j1pt >120, at most 2 jets w/ pt >30 GeV



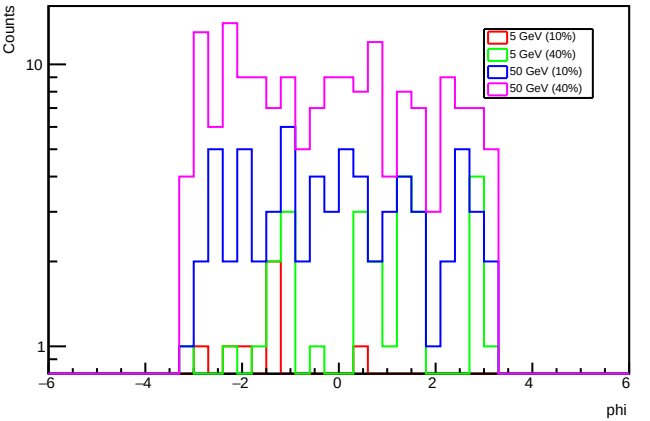

reco subleading Mu eta: at least 2 mu w/ pt ? 2 GeV and eta<2.5



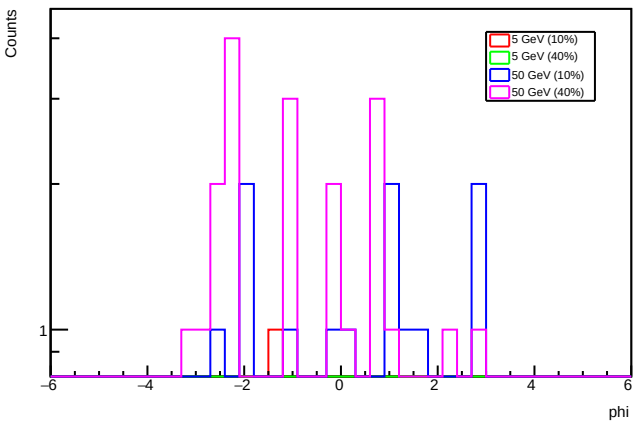
reco subleading Mu phi: no cuts



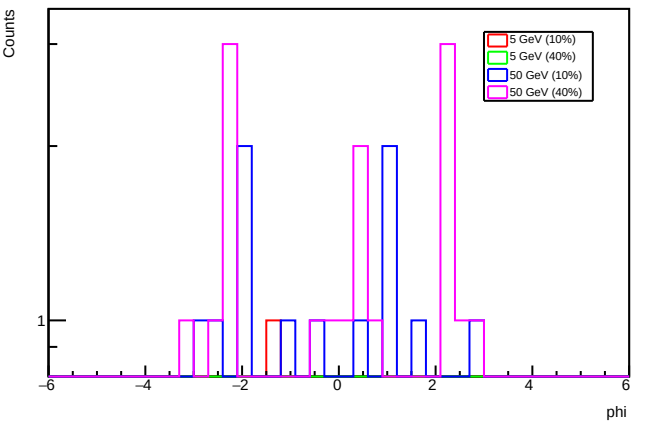

reco subleading Mu phi: n_jet >=1, j1pt > 30 GeV



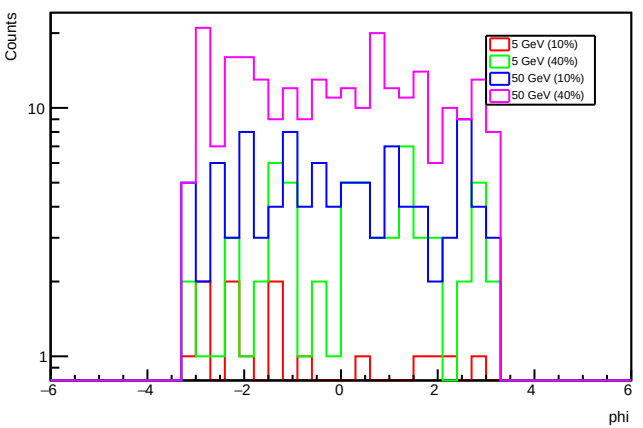

reco subleading Mu phi: MET > 120 GeV



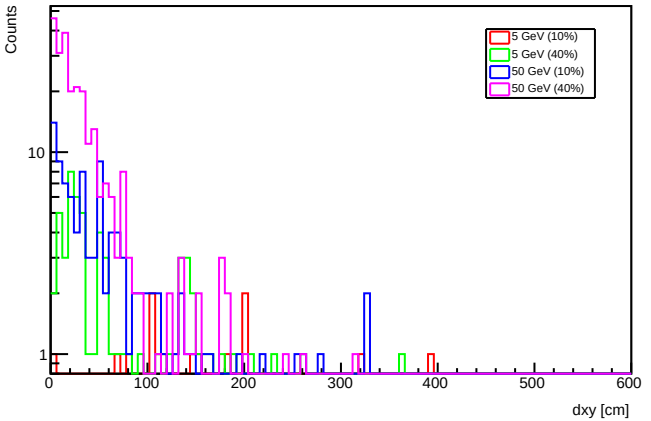

reco subleading Mu phi: j1pt >120, at most 2 jets w/ pt >30 GeV



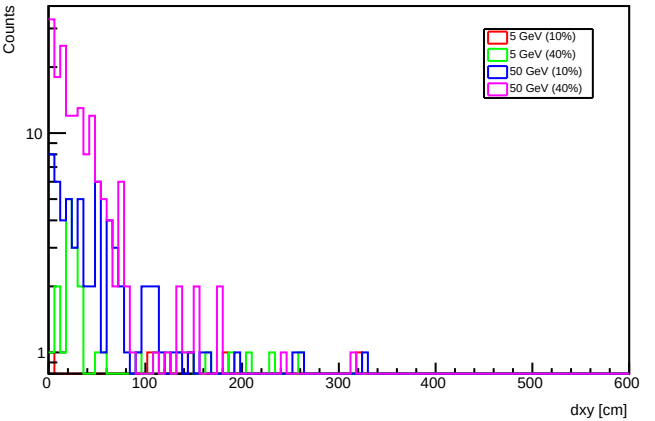

reco subleading Mu phi: at least 2 mu w/ pt ? 2 GeV and eta<2.5



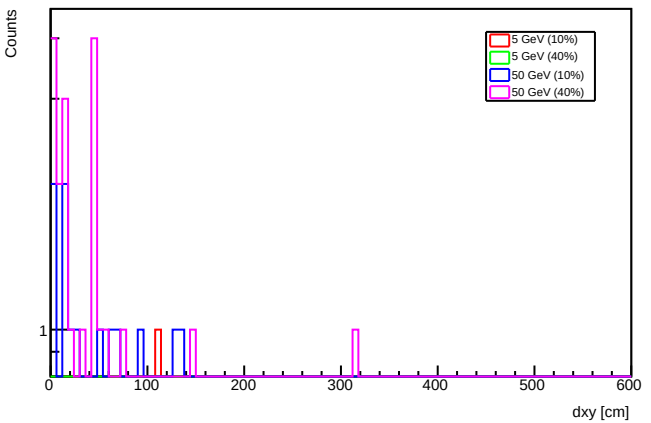
reco subleading Mu vxy: no cuts



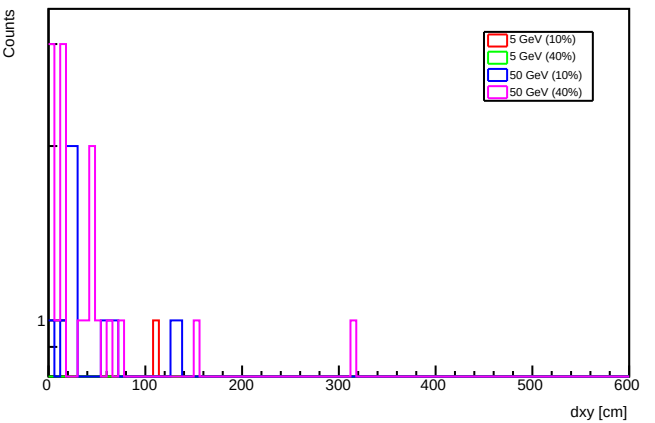

reco subleading Mu vxy: n_jet >=1, j1pt > 30 GeV



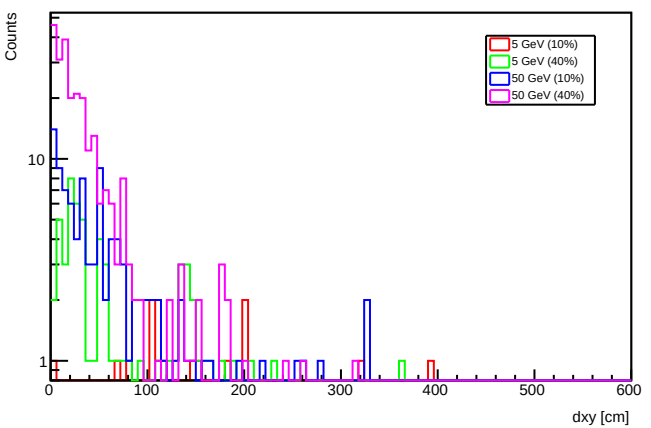

reco subleading Mu vxy: MET > 120 GeV




reco subleading Mu vxy: j1pt >120, at most 2 jets w/ pt >30 GeV




reco subleading Mu vxy: at least 2 mu w/ pt ? 2 GeV and eta<2.5



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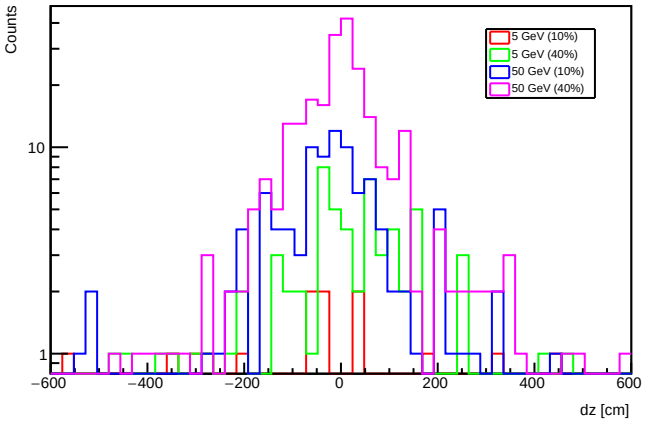
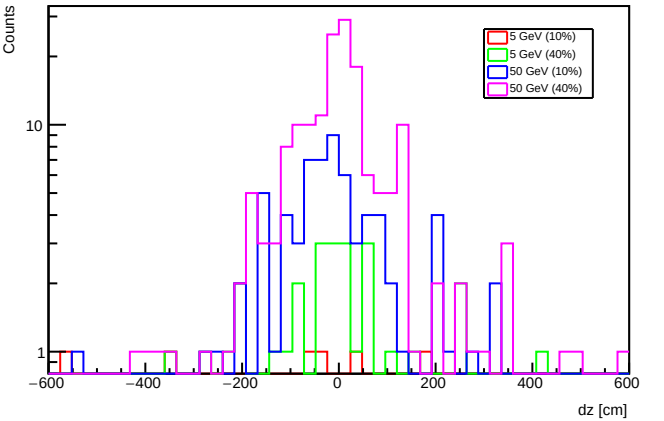
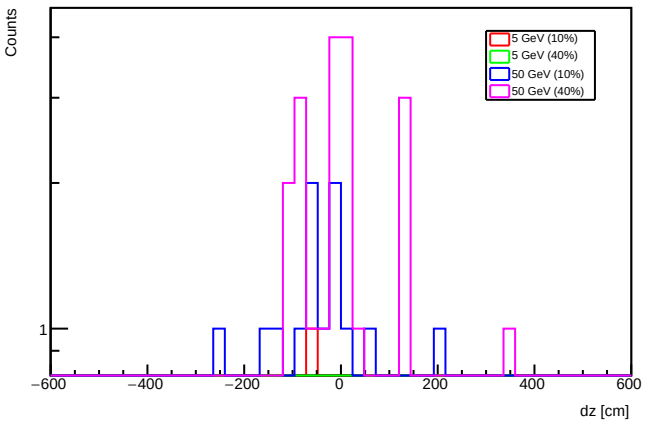


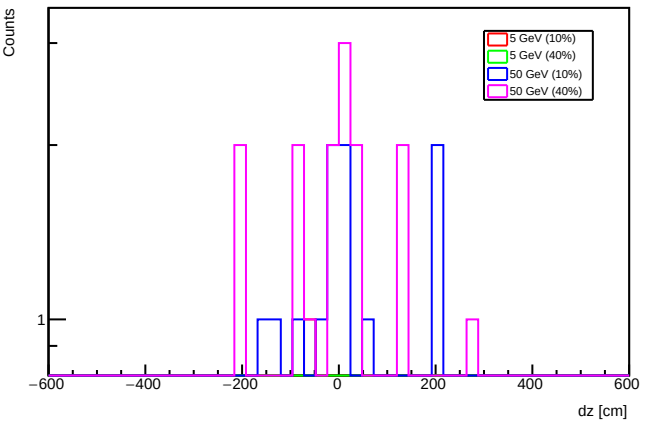

reco subleading Mu vz: n_jet >=1, j1pt > 30 GeV



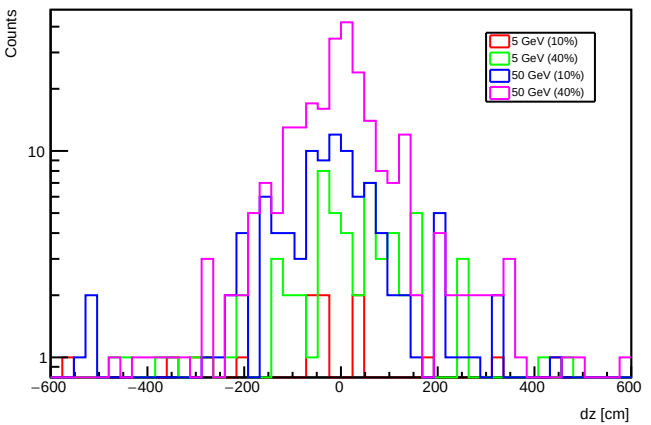

reco subleading Mu vz: MET > 120 GeV



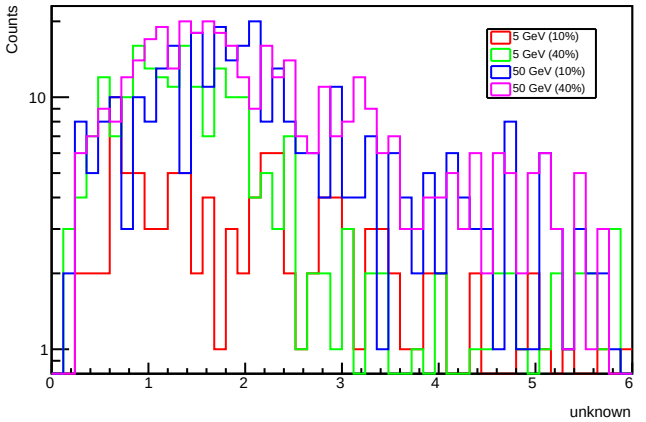

reco subleading Mu vz: j1pt >120, at most 2 jets w/ pt >30 GeV



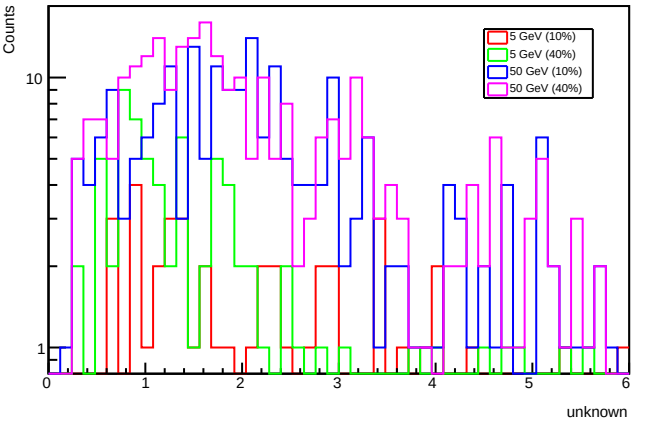

reco subleading Mu vz: at least 2 mu w/ pt ? 2 GeV and eta<2.5



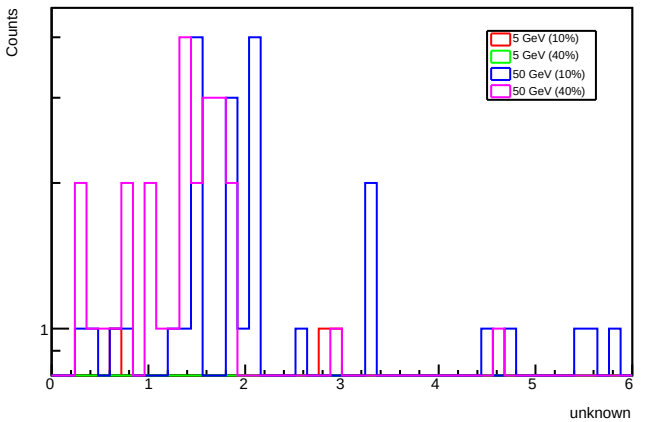
dR: reco leading mu and subleading mu: no cuts



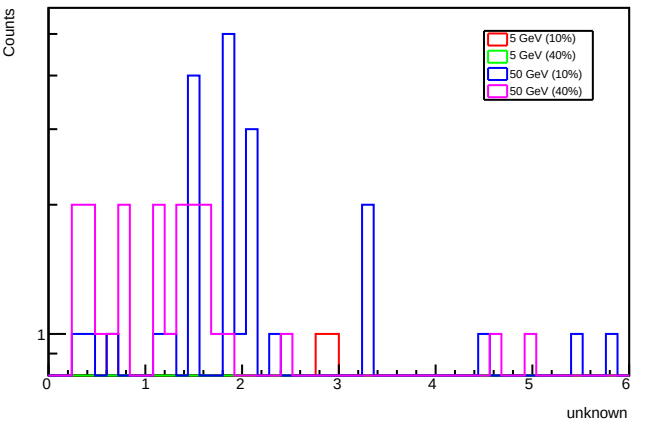

dR: reco leading mu and subleading mu: n_jet >=1, j1pt > 30 GeV



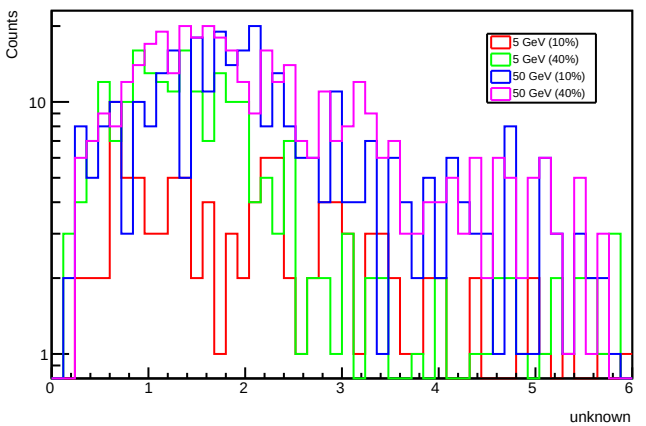

dR: reco leading mu and subleading mu: MET > 120 GeV



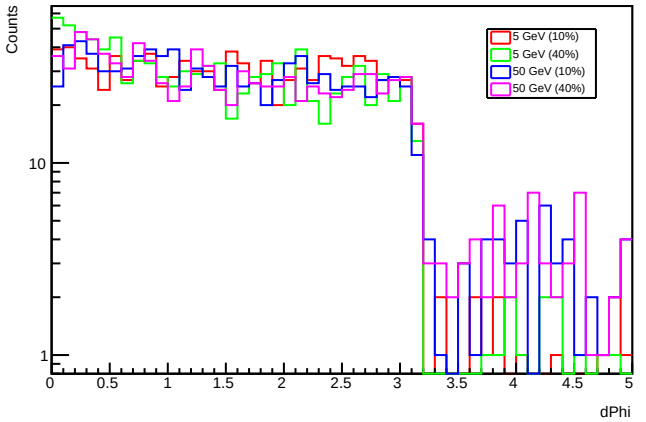

dR: reco leading mu and subleading mu: j1pt >120, at most 2 jets w/ pt >30 GeV



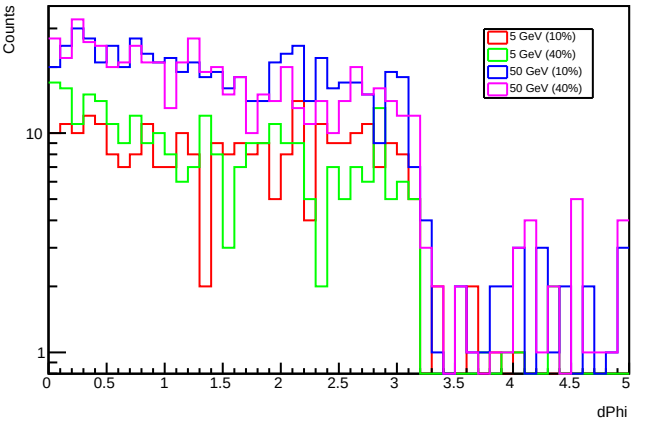

dR: reco leading mu and subleading mu: at least 2 mu w/ pt ? 2 GeV and eta<2.5



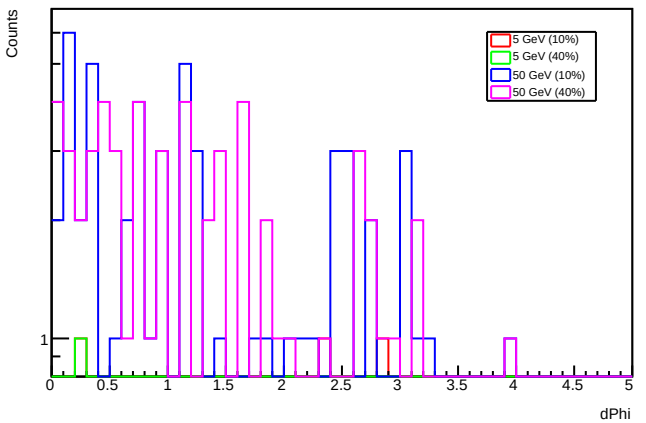
dPhi: reco MET and leading mu: no cuts



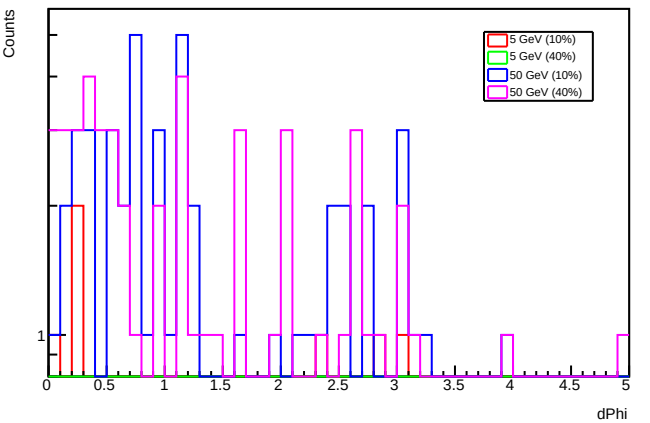

dPhi: reco MET and leading mu: n_jet >=1, j1pt > 30 GeV



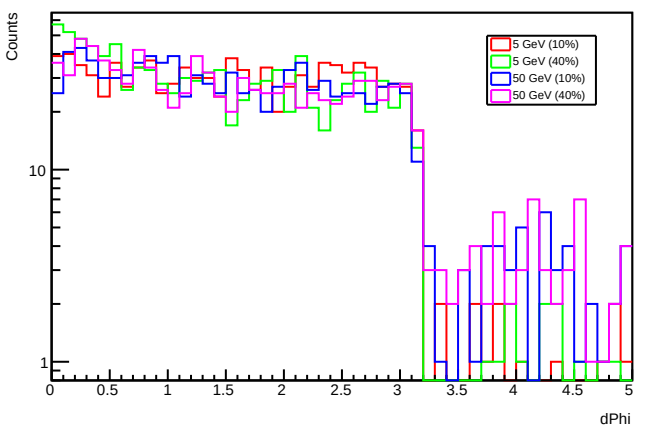

dPhi: reco MET and leading mu: MET > 120 GeV



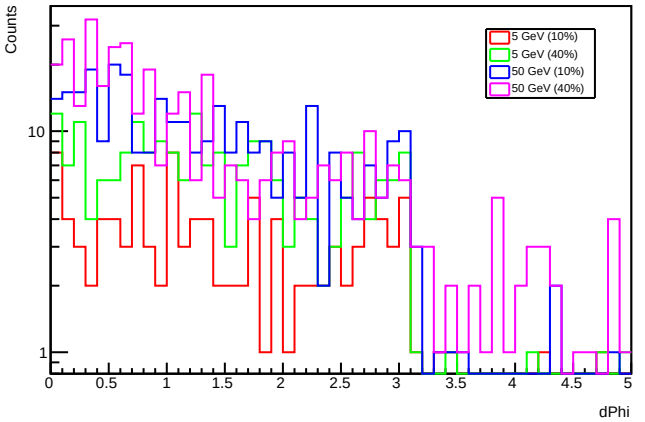

dPhi: reco MET and leading mu: j1pt >120, at most 2 jets w/ pt >30 GeV



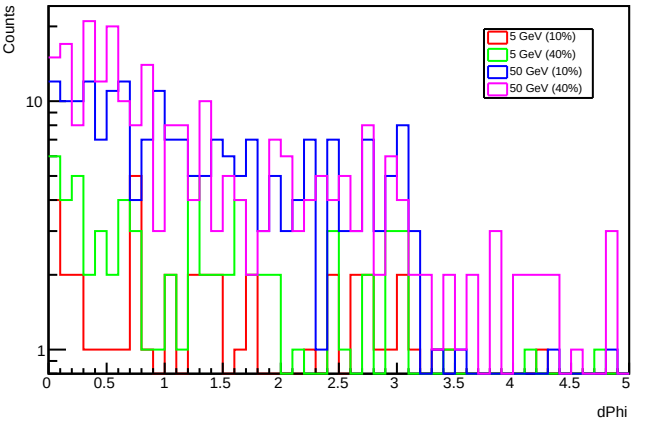

dPhi: reco MET and leading mu: at least 2 mu w/ pt ? 2 GeV and eta<2.5



dPhi: reco leading mu and subleading mu: no cuts




dPhi: reco leading mu and subleading mu: n_jet >=1, j1pt > 30 GeV

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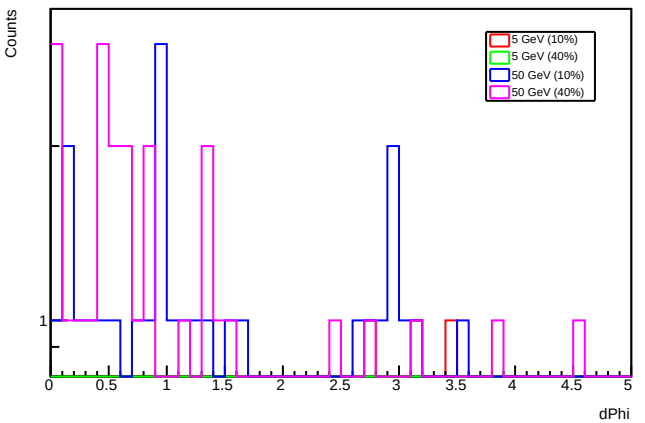
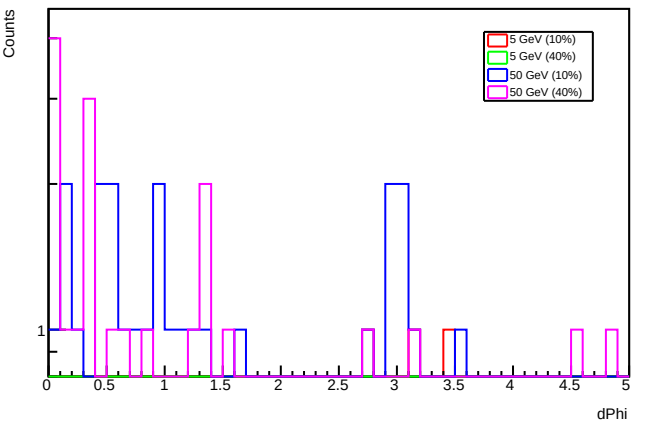
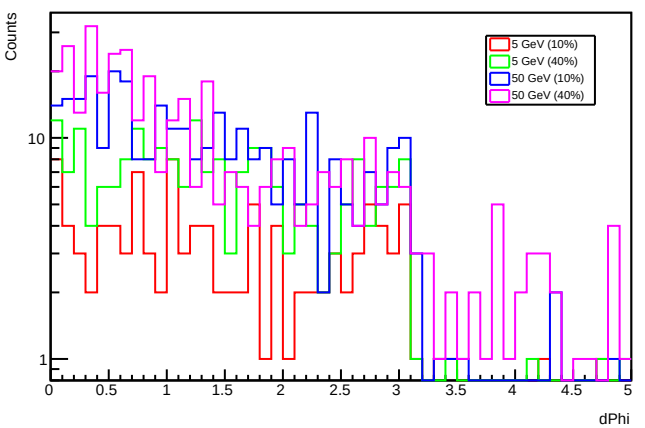


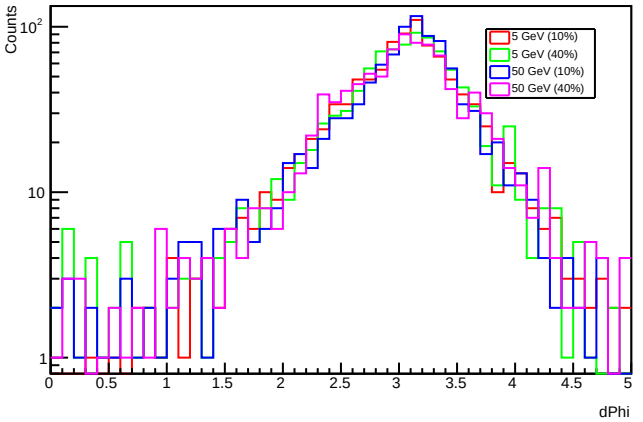

dPhi: reco leading mu and subleading mu: j1pt >120, at most 2 jets w/ pt >30 GeV



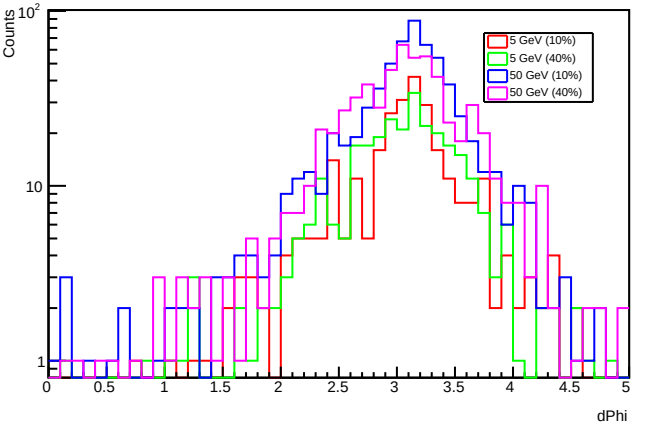

dPhi: reco leading mu and subleading mu: at least 2 mu w/ pt ? 2 GeV and eta<2.5



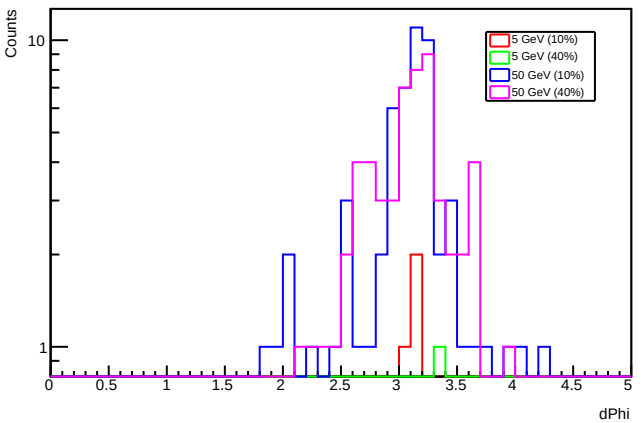
dPhi: reco MET and leading jet: no cuts



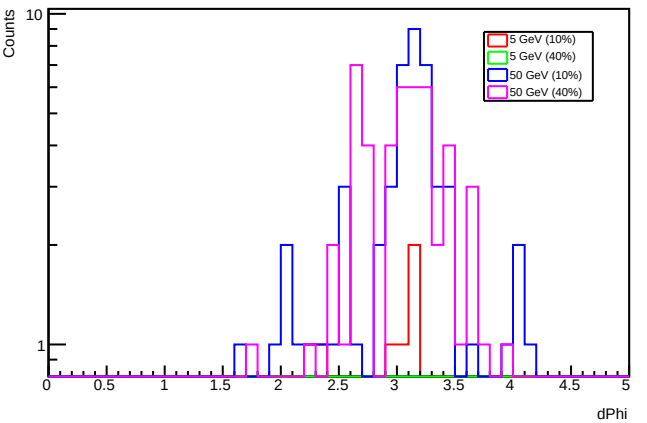

dPhi: reco MET and leading jet: n_jet >=1, j1pt > 30 GeV



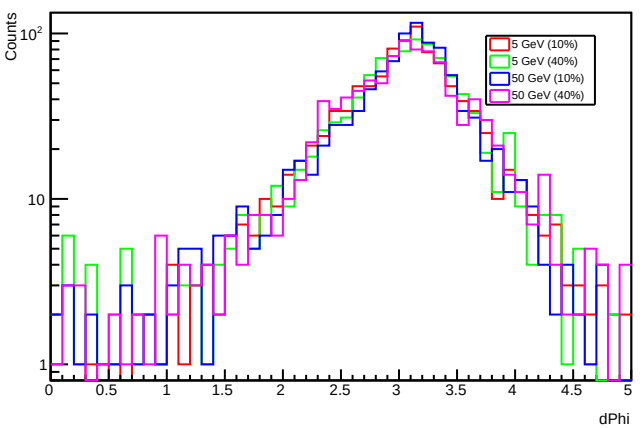

dPhi: reco MET and leading jet: MET > 120 GeV



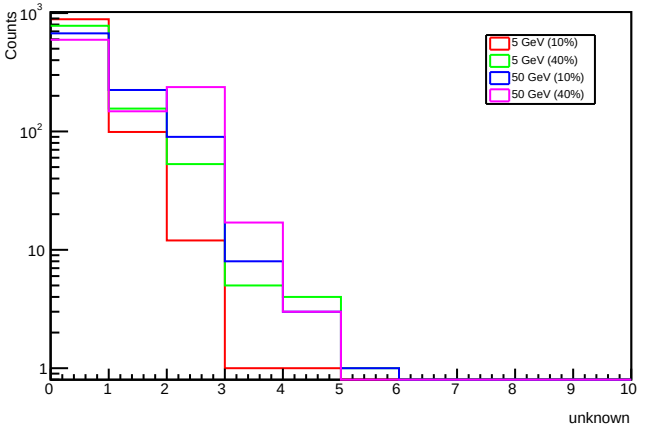

dPhi: reco MET and leading jet: j1pt >120, at most 2 jets w/ pt >30 GeV



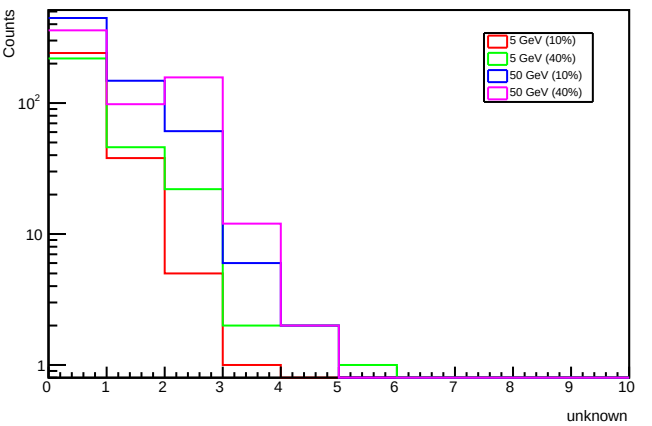

dPhi: reco MET and leading jet: at least 2 mu w/ pt ? 2 GeV and eta<2.5



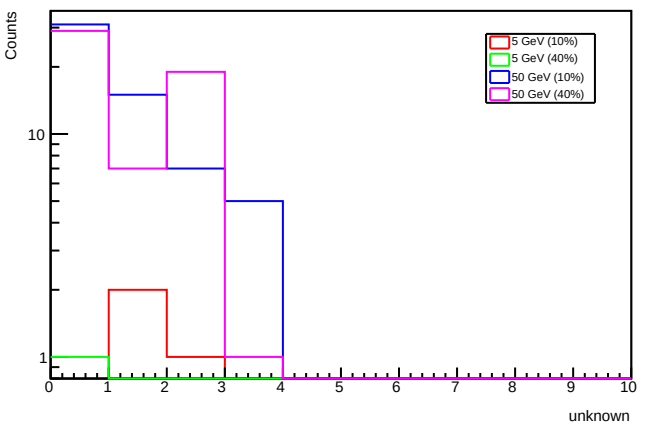
reco number of jets: no cuts



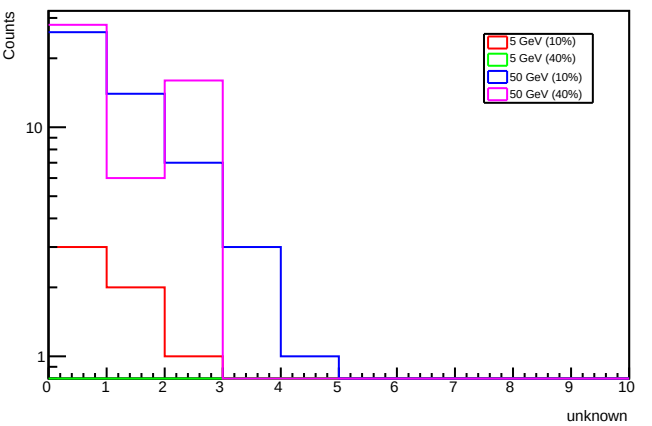

reco number of jets: n_jet >=1, j1pt > 30 GeV



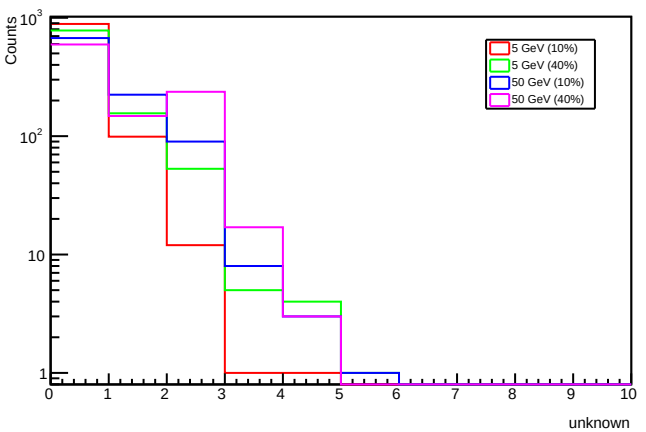

reco number of jets: MET > 120 GeV



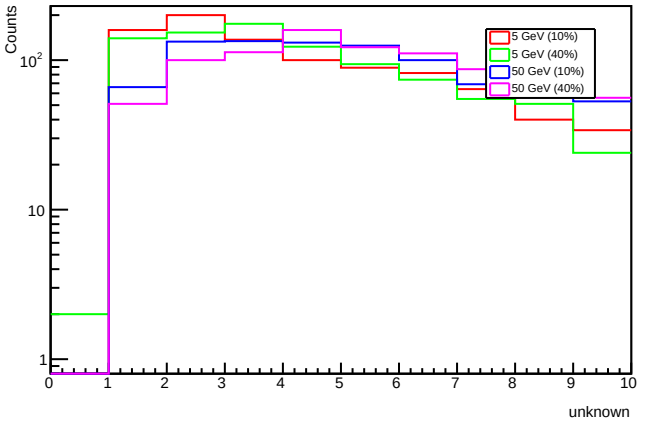

reco number of jets: j1pt >120, at most 2 jets w/ pt >30 GeV



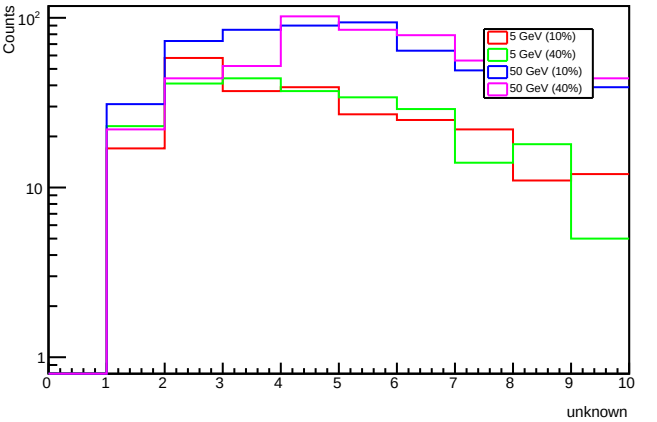

reco number of jets: at least 2 mu w/ pt ? 2 GeV and eta<2.5



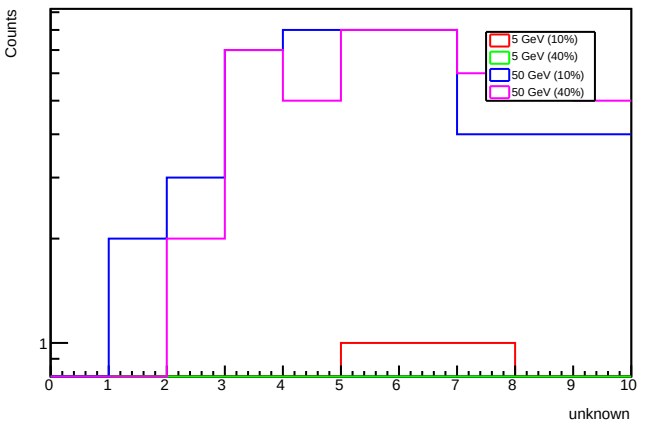
reco number of mu: no cuts



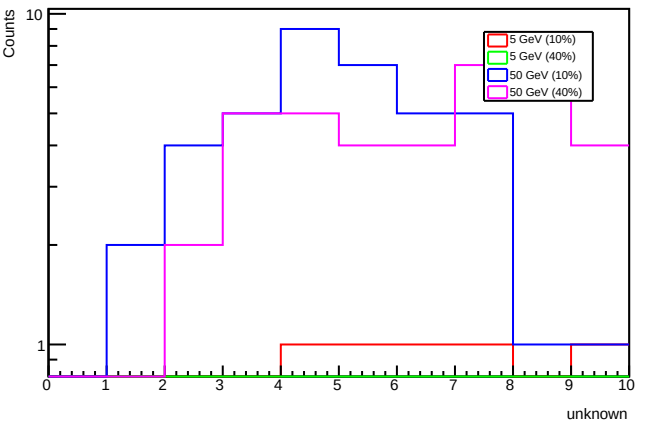

reco number of mu: n_jet >=1, j1pt > 30 GeV




reco number of mu: MET > 120 GeV




reco number of mu: j1pt >120, at most 2 jets w/ pt >30 GeV

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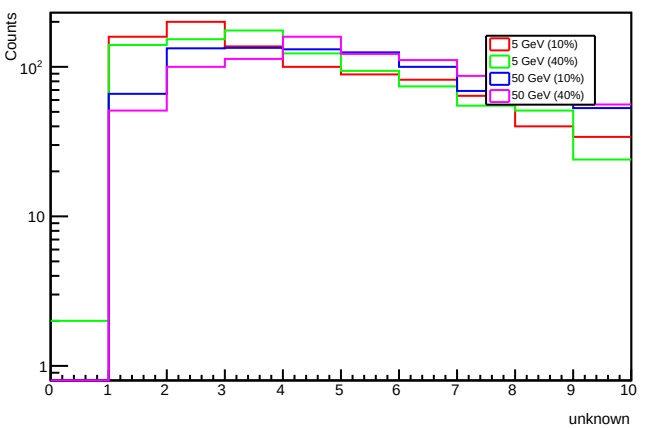
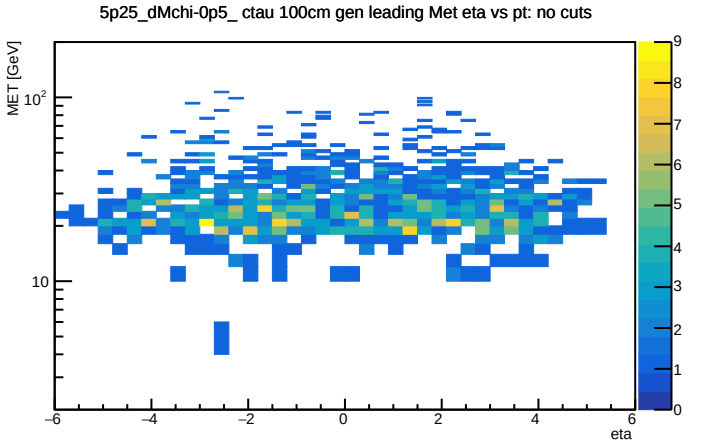
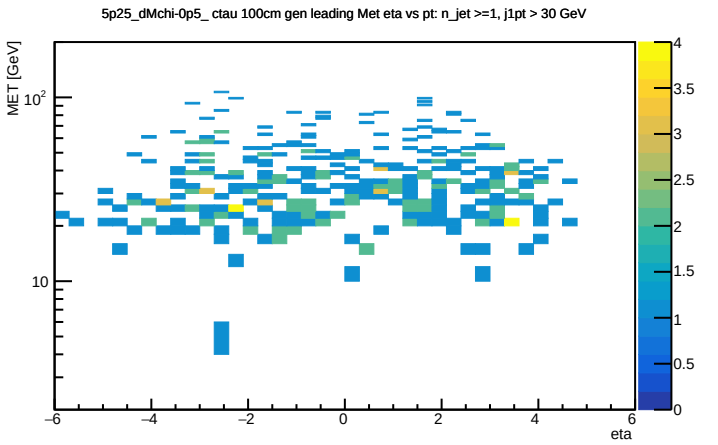
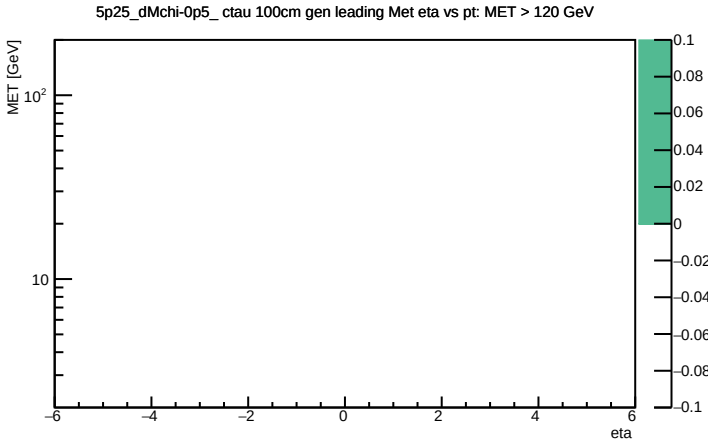
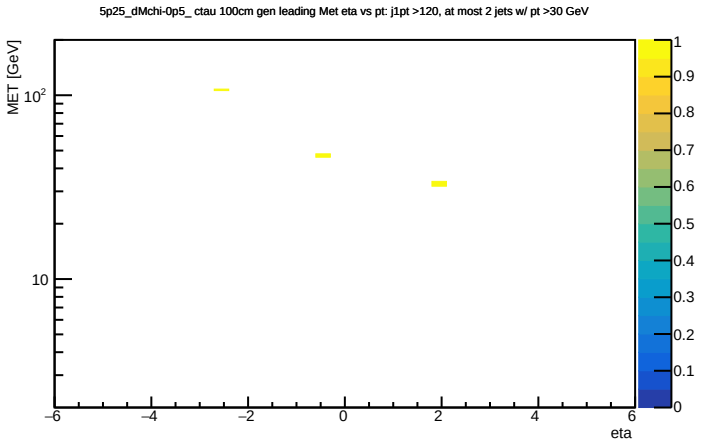



5p25_dMchi-0p5_ ctau 100cm gen leading Met eta vs pt: no cuts
MET [GeV]
eta


5p25_dMchi-0p5_ ctau 100cm gen leading Met eta vs pt: n_jet >=1, j1pt > 30 GeV
MET [GeV]
eta


5p25_dMchi-0p5_ ctau 100cm gen leading Met eta vs pt: MET > 120 GeV
MET [GeV]
eta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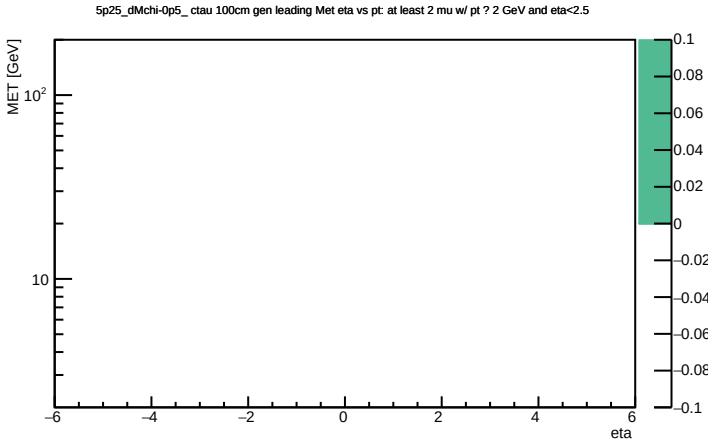
MET [GeV]
eta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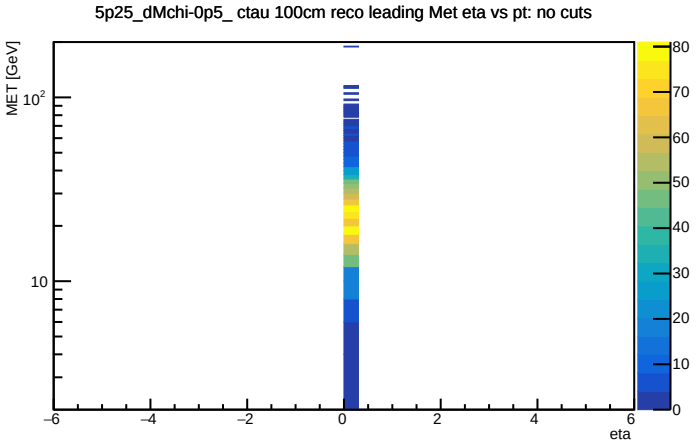
MET [GeV]
eta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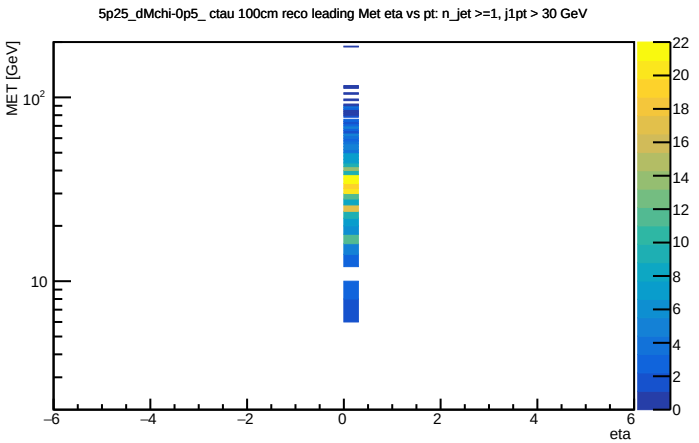
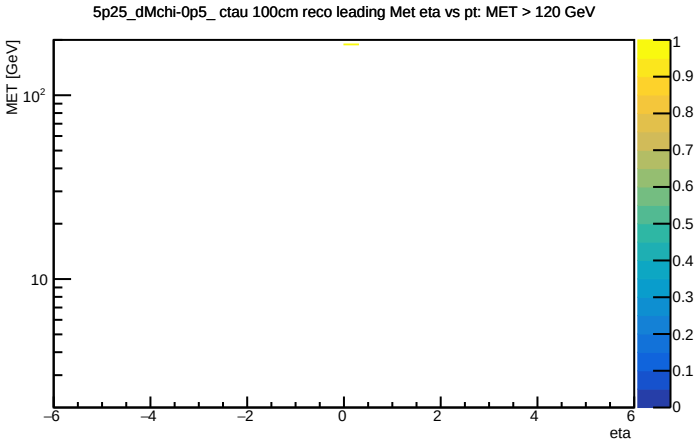
MET [GeV]
eta


5p25_dMchi-0p5_ ctau 100cm reco leading Met eta vs pt: n_jet >=1, j1pt > 30 GeV
MET [GeV]
eta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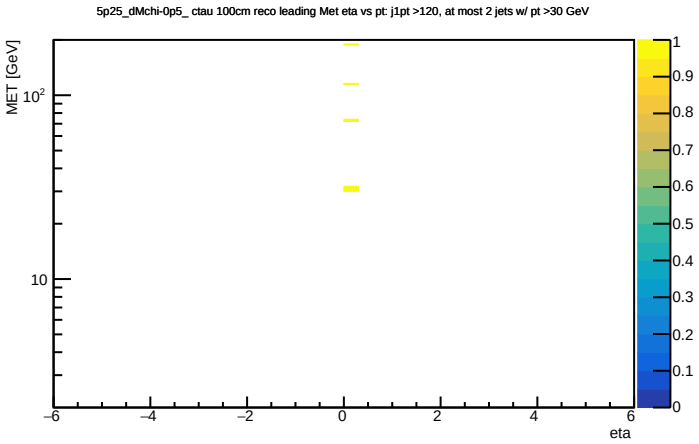
MET [GeV]
eta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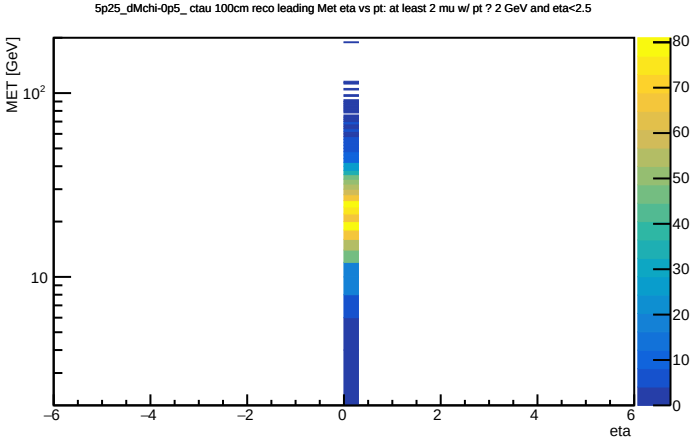
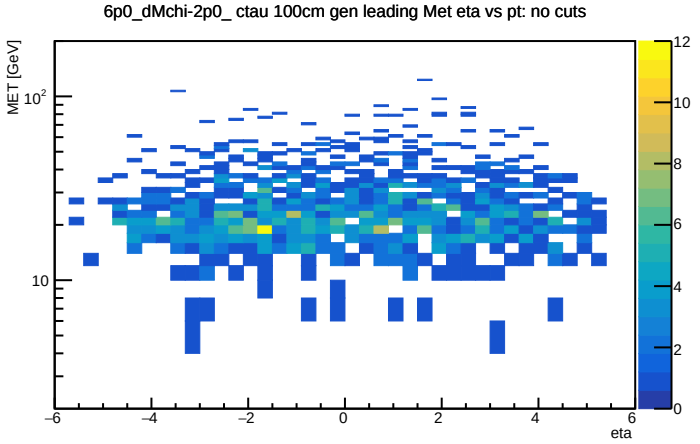
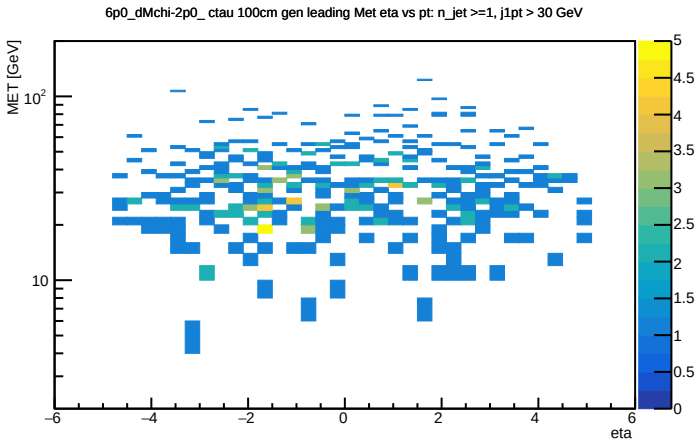
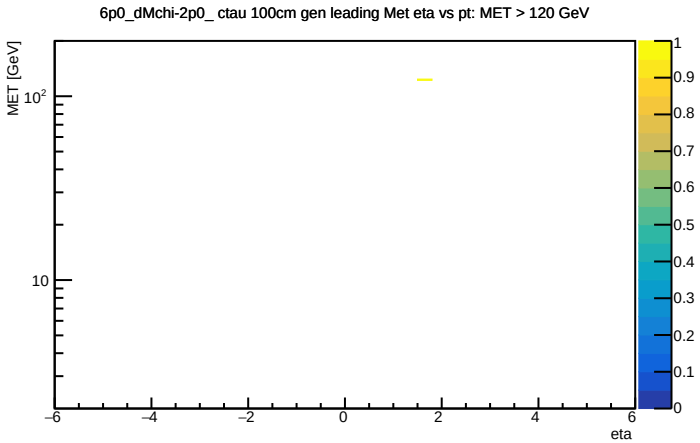
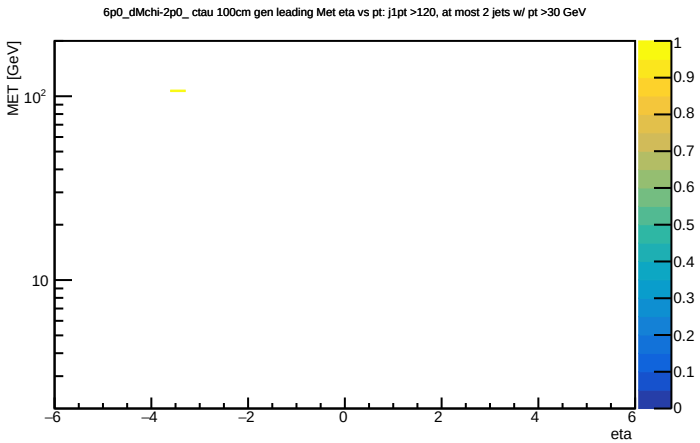
MET [GeV]
eta


5p25_dMchi-0p5_ ctau 100cm reco leading Met eta vs pt: at least 2 mu w/ pt ? 2 GeV and eta<2.5
MET [GeV]
eta


6p0_dMchi-2p0_ ctau 100cm gen leading Met eta vs pt: no cuts
MET [GeV]
eta


6p0_dMchi-2p0_ ctau 100cm gen leading Met eta vs pt: n_jet >=1, j1pt > 30 GeV
MET [GeV]
eta


6p0_dMchi-2p0_ ctau 100cm gen leading Met eta vs pt: MET > 120 GeV
MET [GeV]
eta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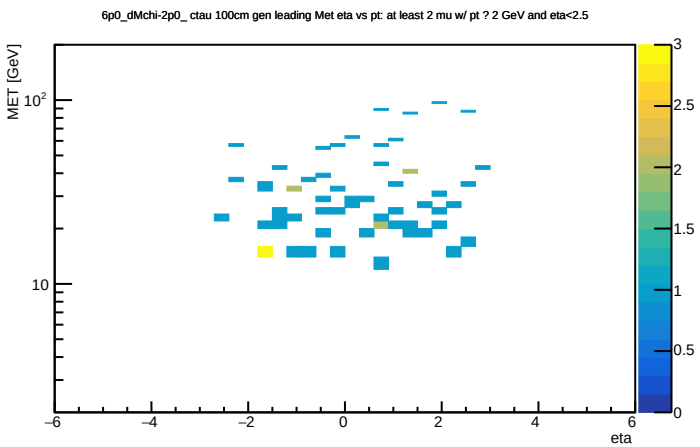
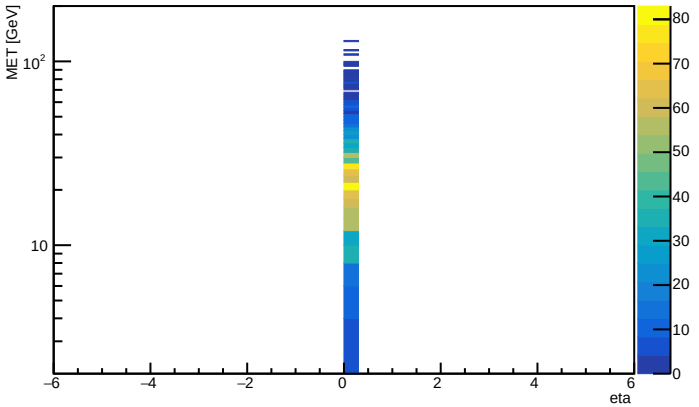
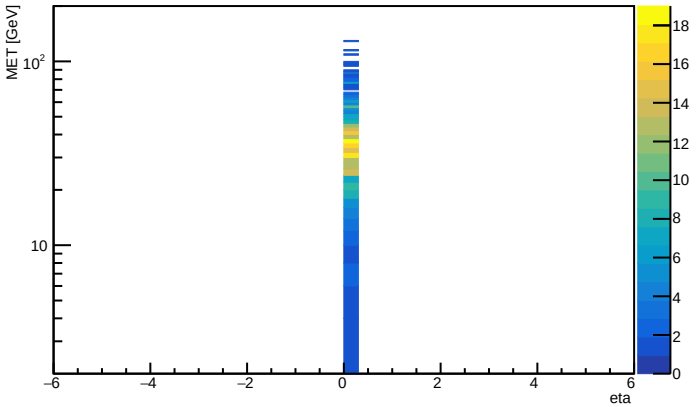
MET [GeV]
eta


6p0_dMchi-2p0_ ctau 100cm gen leading Met eta vs pt: at least 2 mu w/ pt ? 2 GeV and eta<2.5
MET [GeV]
eta

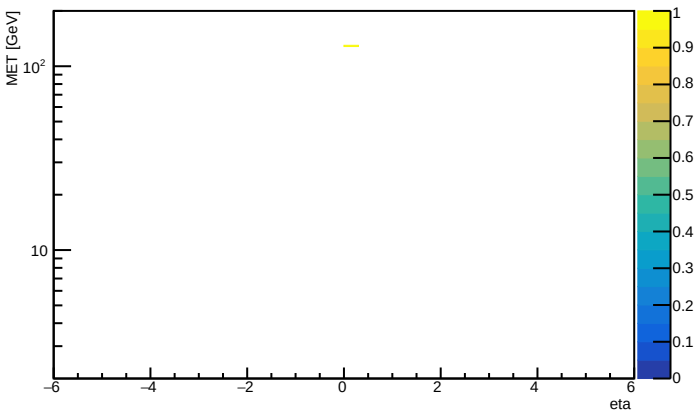
6p0_dMchi-2p0_ ctau 100cm reco leading Met eta vs pt: no cuts



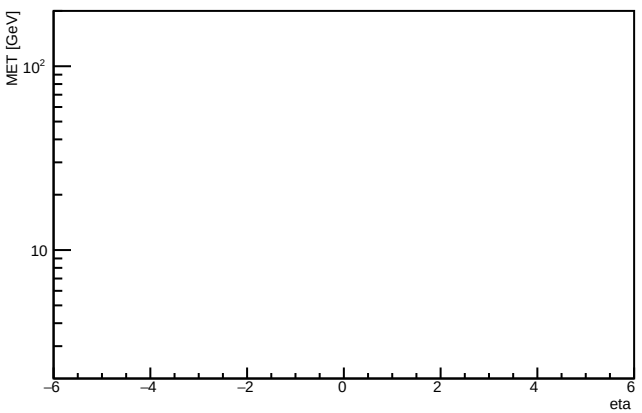

6p0_dMchi-2p0_ ctau 100cm reco leading Met eta vs pt: n_jet >=1, j1pt > 30 GeV



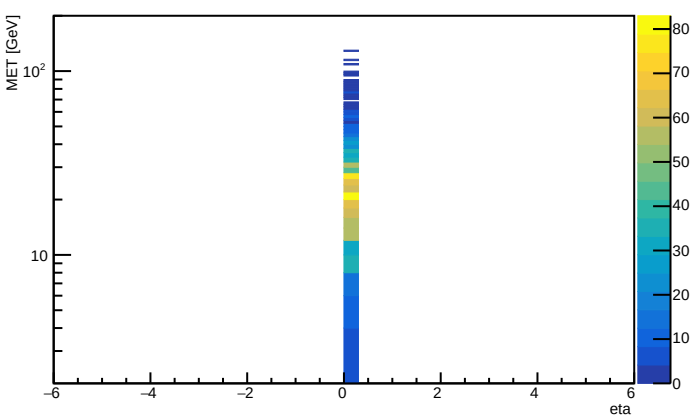

6p0_dMchi-2p0_ ctau 100cm reco leading Met eta vs pt: MET > 120 GeV



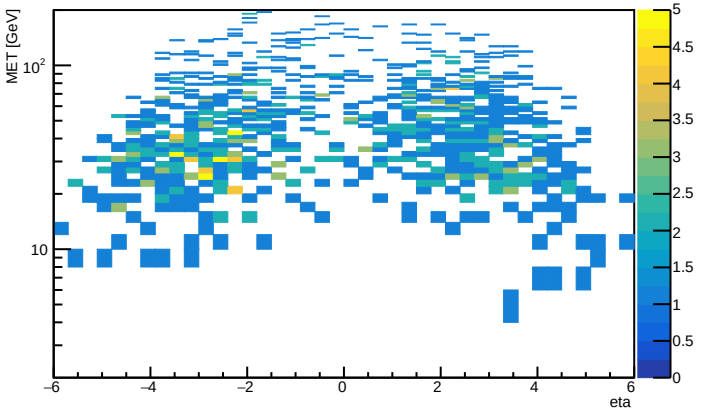

6p0_dMchi-2p0_ ctau 100cm reco leading Met eta vs pt: j1pt >120, at most 2 jets w/ pt >30 GeV



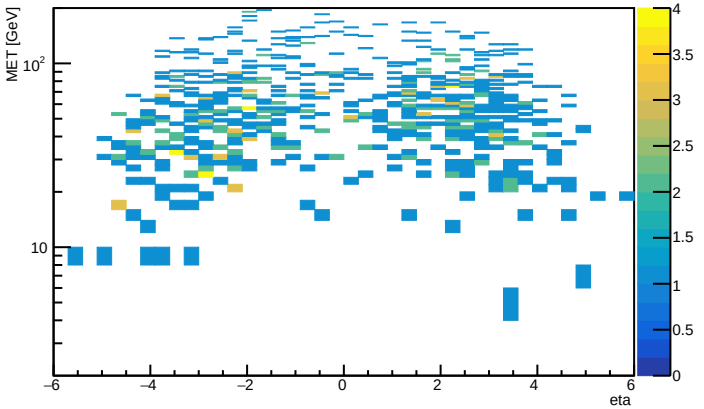

6p0_dMchi-2p0_ ctau 100cm reco leading Met eta vs pt: at least 2 mu w/ pt ? 2 GeV and eta<2.5



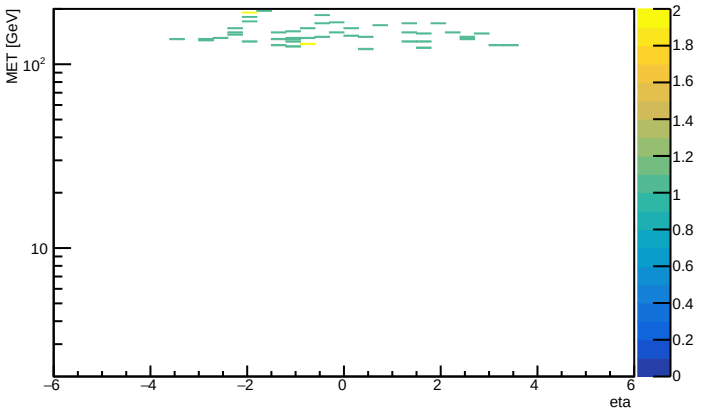
52p5_dMchi-5_ ctau 100cm gen leading Met eta vs pt: no cuts



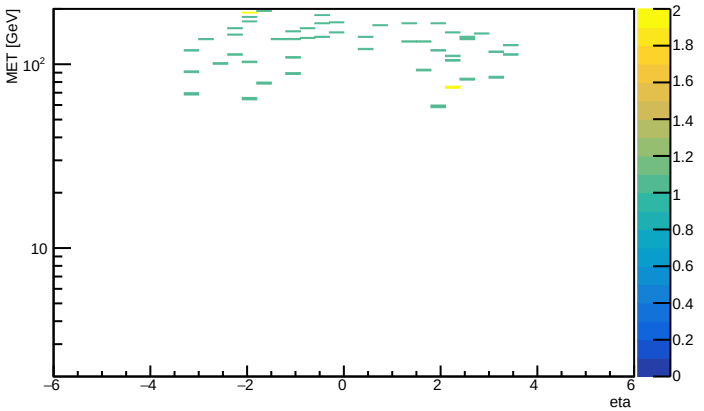

52p5_dMchi-5_ ctau 100cm gen leading Met eta vs pt: n_jet >=1, j1pt > 30 GeV



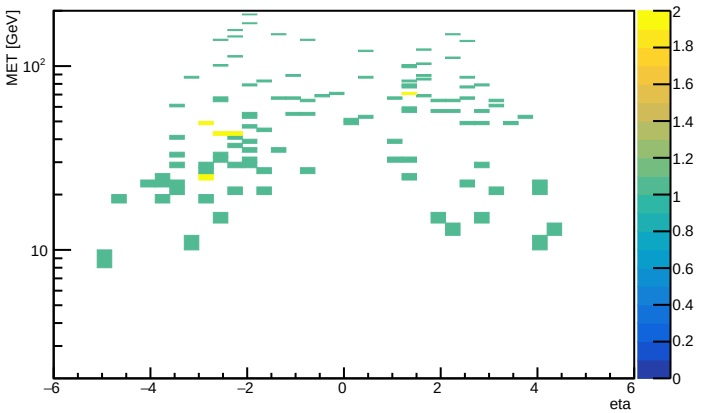

52p5_dMchi-5_ ctau 100cm gen leading Met eta vs pt: MET > 120 GeV



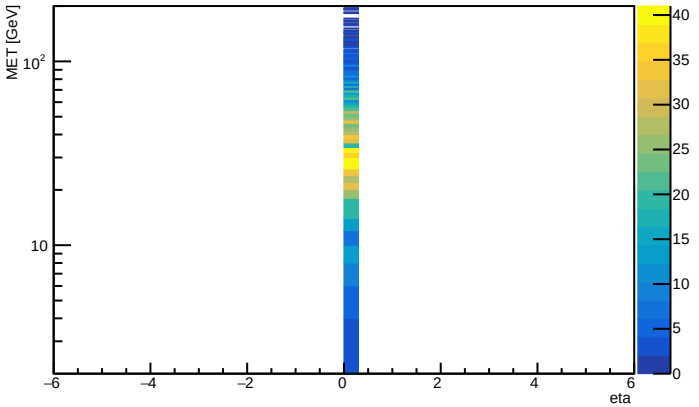

52p5_dMchi-5_ ctau 100cm gen leading Met eta vs pt: j1pt >120, at most 2 jets w/ pt >30 GeV



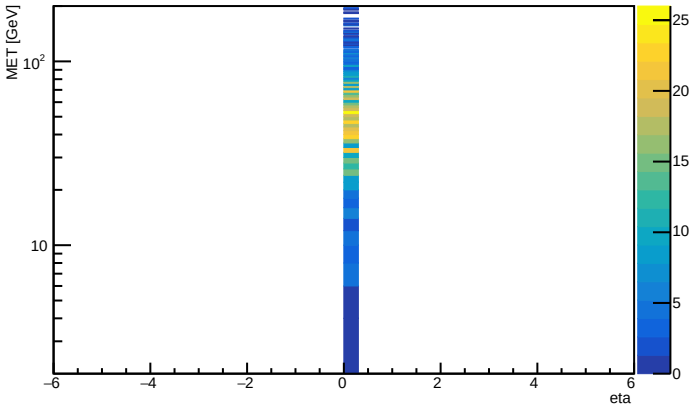

52p5_dMchi-5_ ctau 100cm gen leading Met eta vs pt: at least 2 mu w/ pt ? 2 GeV and eta<2.5



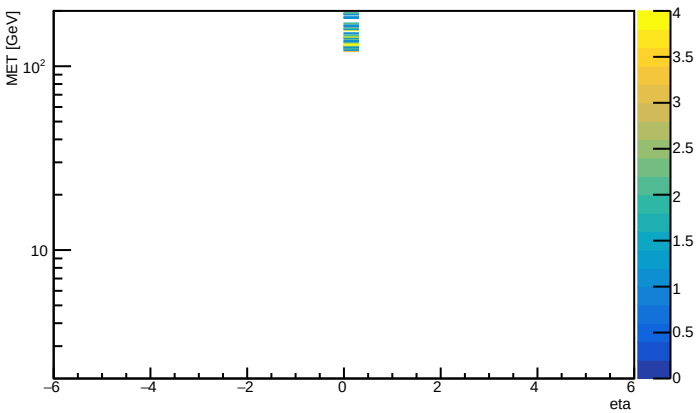
52p5_dMchi-5_ ctau 100cm reco leading Met eta vs pt: no cuts



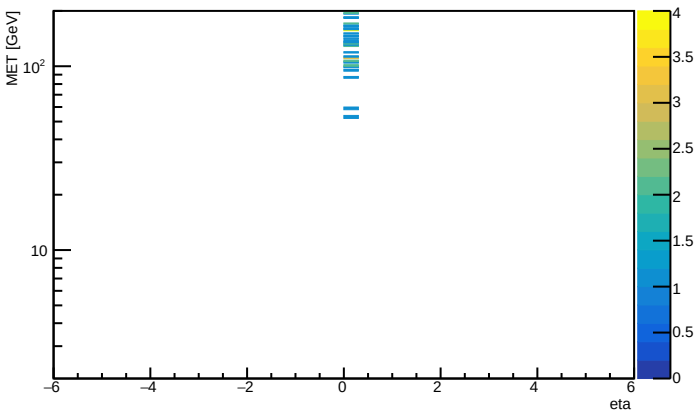

52p5_dMchi-5_ ctau 100cm reco leading Met eta vs pt: n_jet >=1, j1pt > 30 GeV



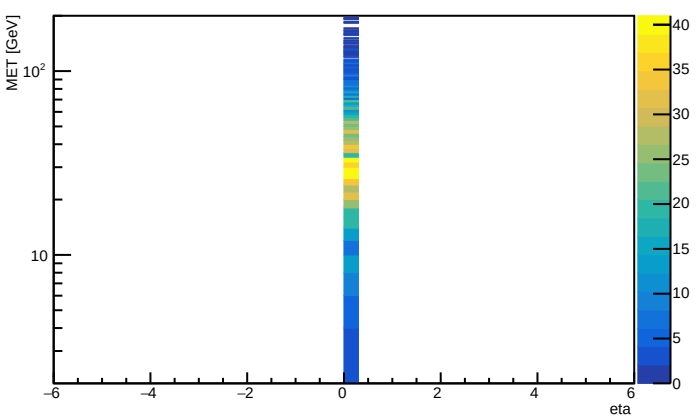

52p5_dMchi-5_ ctau 100cm reco leading Met eta vs pt: MET > 120 GeV



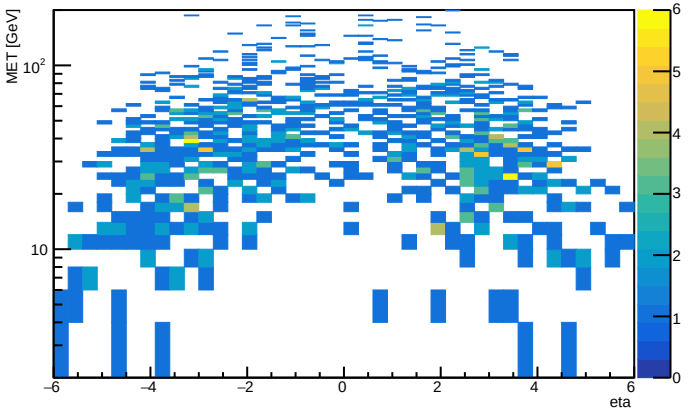

52p5_dMchi-5_ ctau 100cm reco leading Met eta vs pt: j1pt >120, at most 2 jets w/ pt >30 GeV



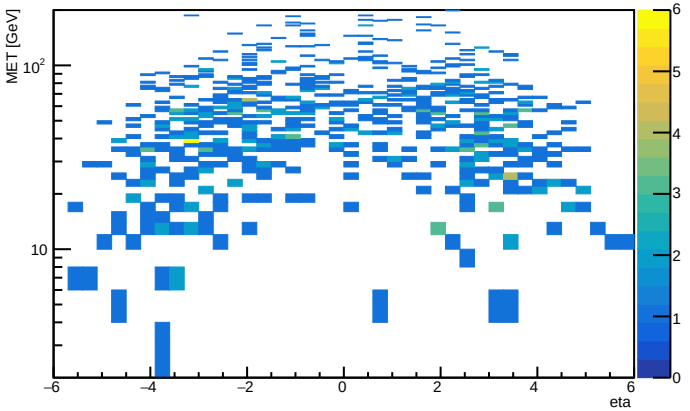

52p5_dMchi-5_ ctau 100cm reco leading Met eta vs pt: at least 2 mu w/ pt ? 2 GeV and eta<2.5



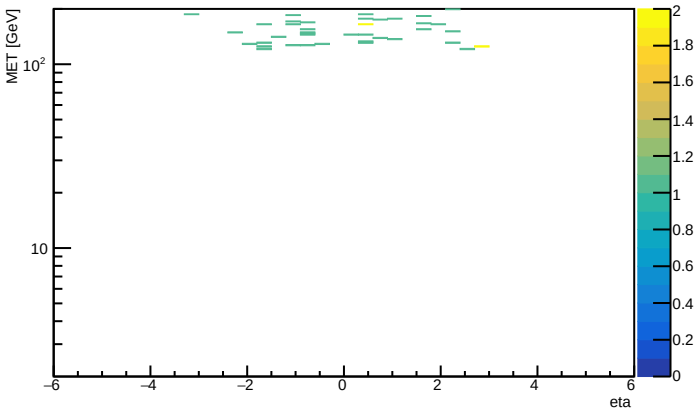
60_dMchi-20_ ctau 100cm gen leading Met eta vs pt: no cuts



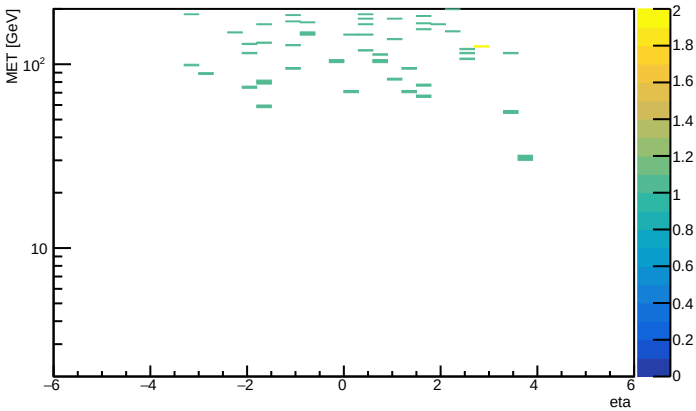

60_dMchi-20_ ctau 100cm gen leading Met eta vs pt: n_jet >=1, j1pt > 30 GeV



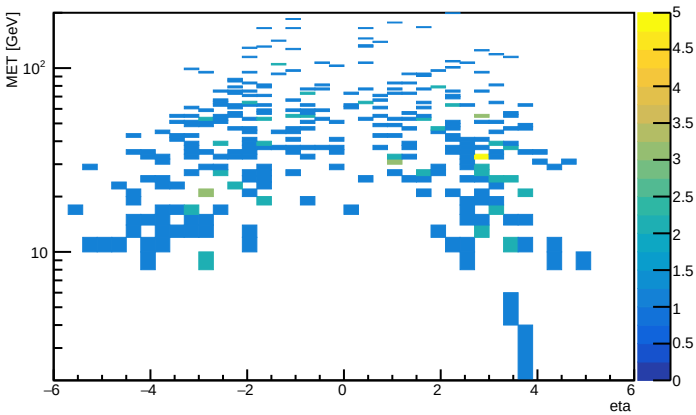

60_dMchi-20_ ctau 100cm gen leading Met eta vs pt: MET > 120 GeV

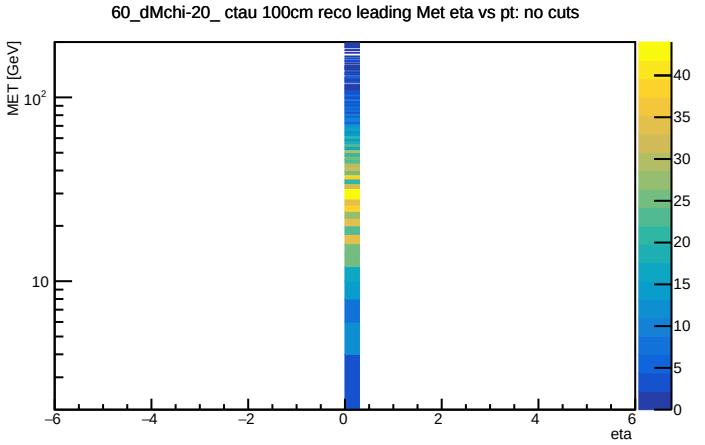


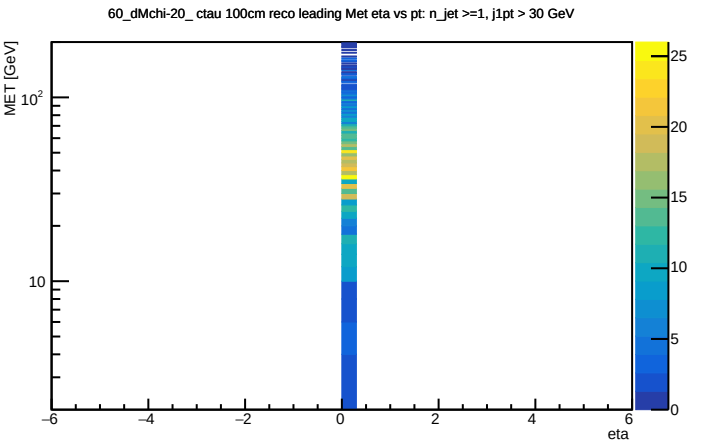

60_dMchi-20_ ctau 100cm gen leading Met eta vs pt: j1pt >120, at most 2 jets w/ pt >30 GeV

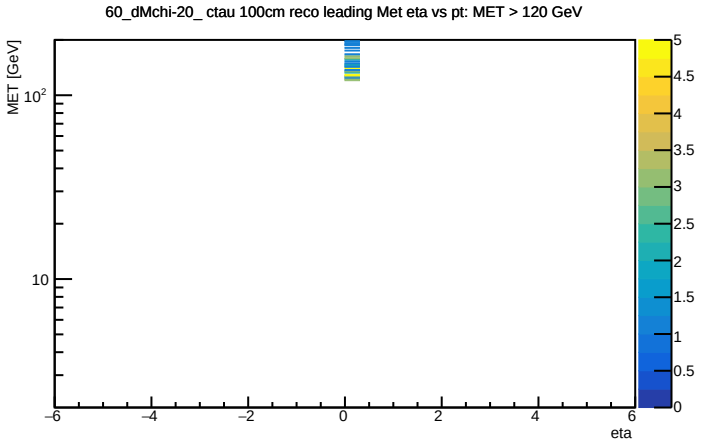


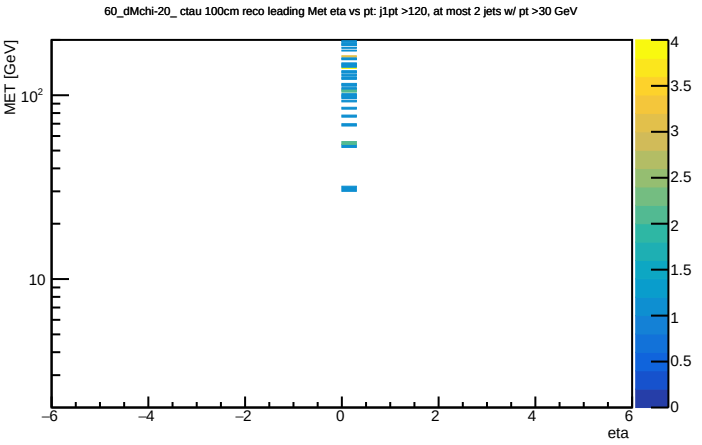

60_dMchi-20_ ctau 100cm gen leading Met eta vs pt: at least 2 mu w/ pt ? 2 GeV and eta<2.5

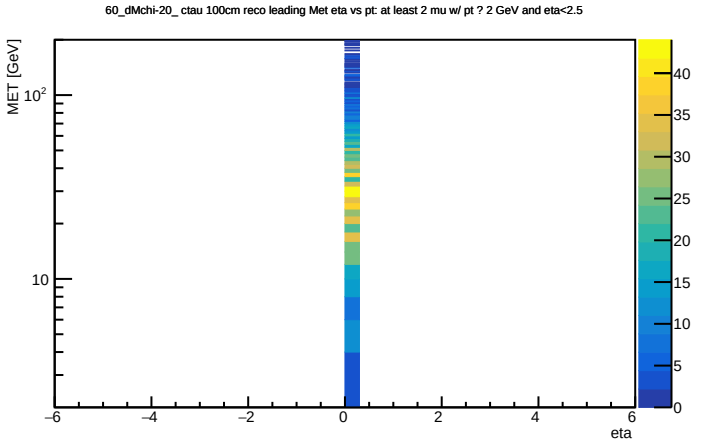



60_dMchi-20_ ctau 100cm reco leading Met eta vs pt: no cuts
MET [GeV]
eta

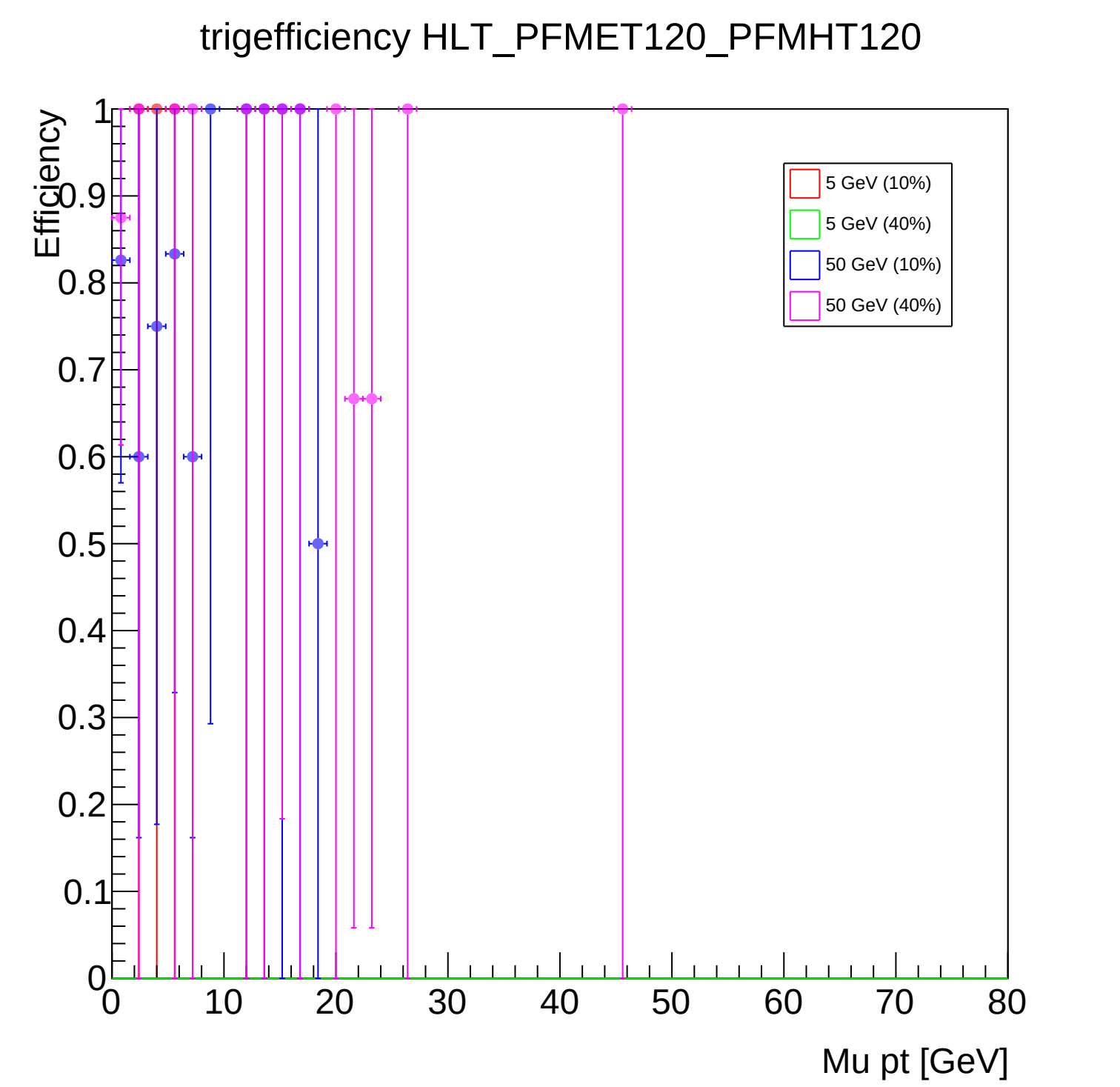

60_dMchi-20_ ctau 100cm reco leading Met eta vs pt: n_jet >=1, j1pt > 30 GeV
MET [GeV]
eta

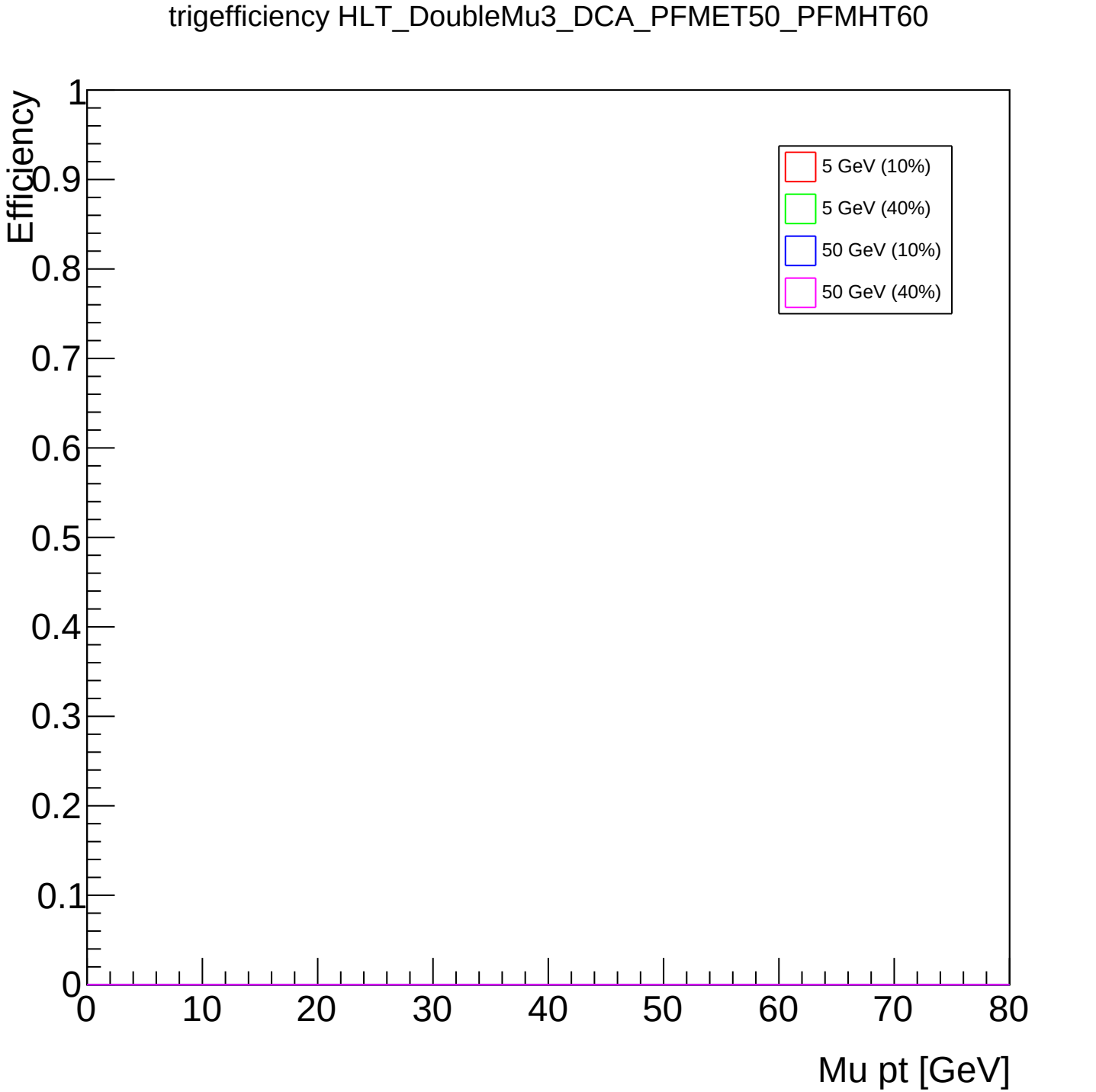

60_dMchi-20_ ctau 100cm reco leading Met eta vs pt: MET > 120 GeV
MET [GeV]
eta

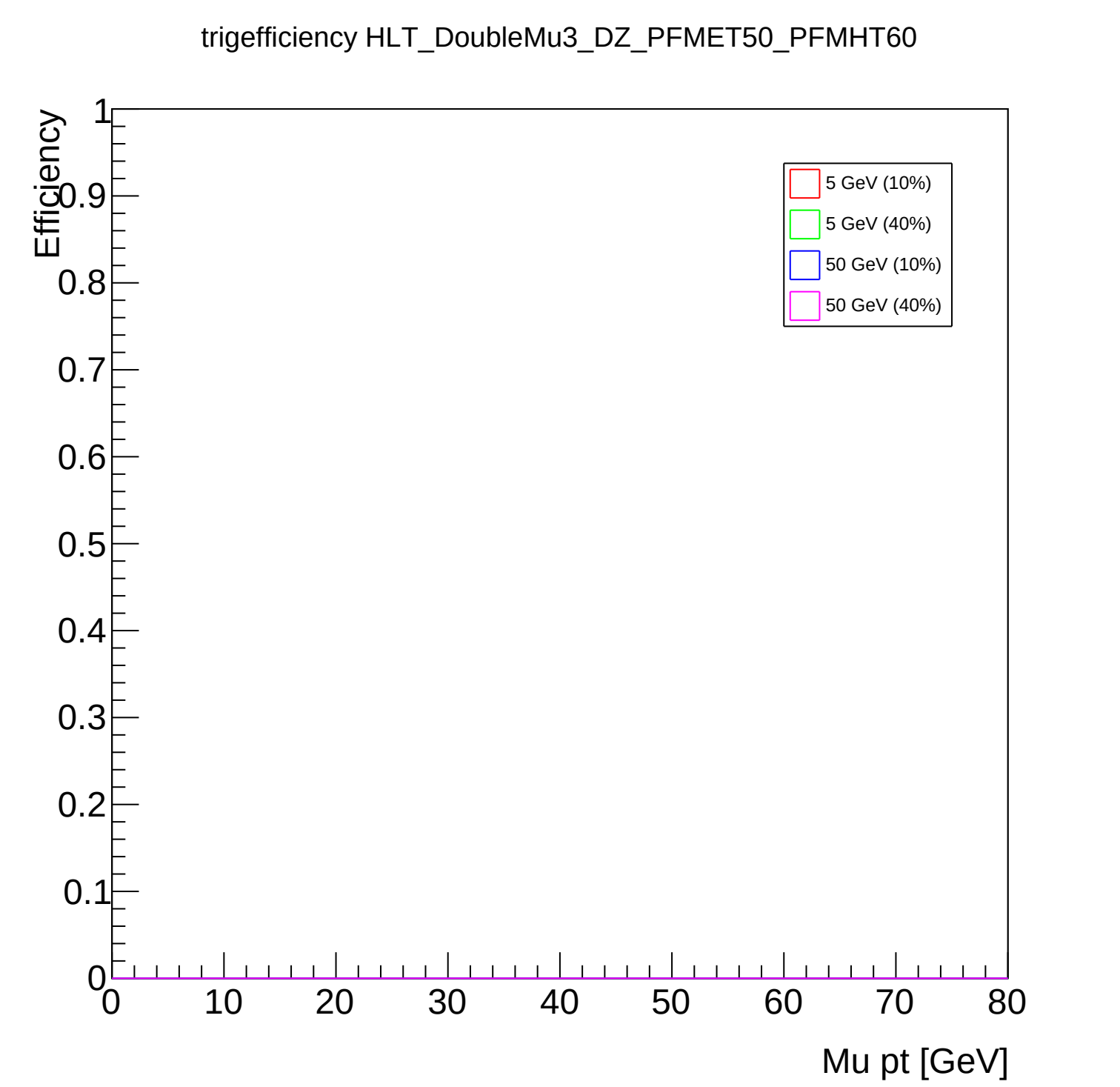

60_dMchi-20_ ctau 100cm reco leading Met eta vs pt: j1pt >120, at most 2 jets w/ pt >30 GeV
MET [GeV]
eta

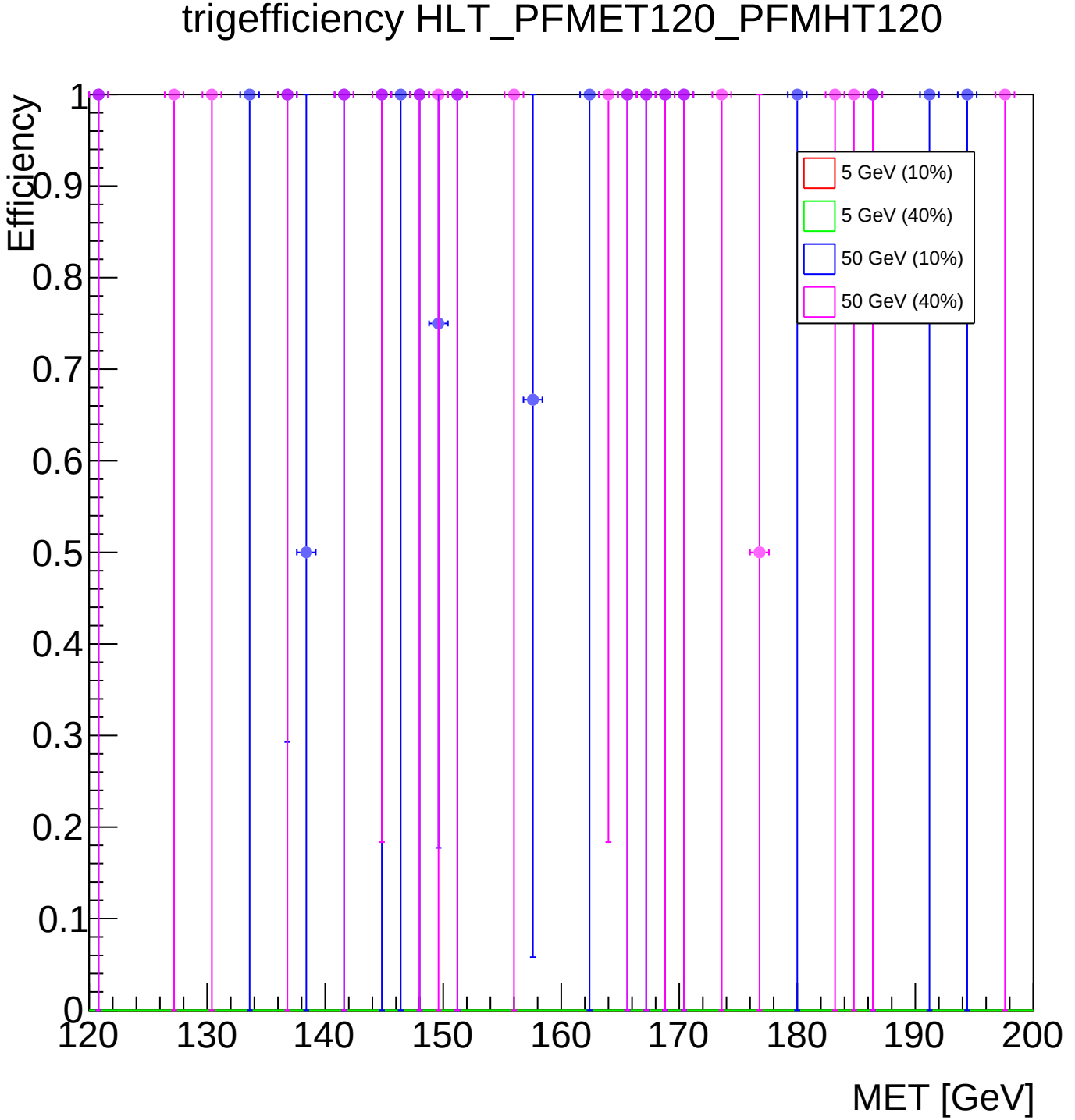

60_dMchi-20_ ctau 100cm reco leading Met eta vs pt: at least 2 mu w/ pt ? 2 GeV and eta<2.5
MET [GeV]
eta

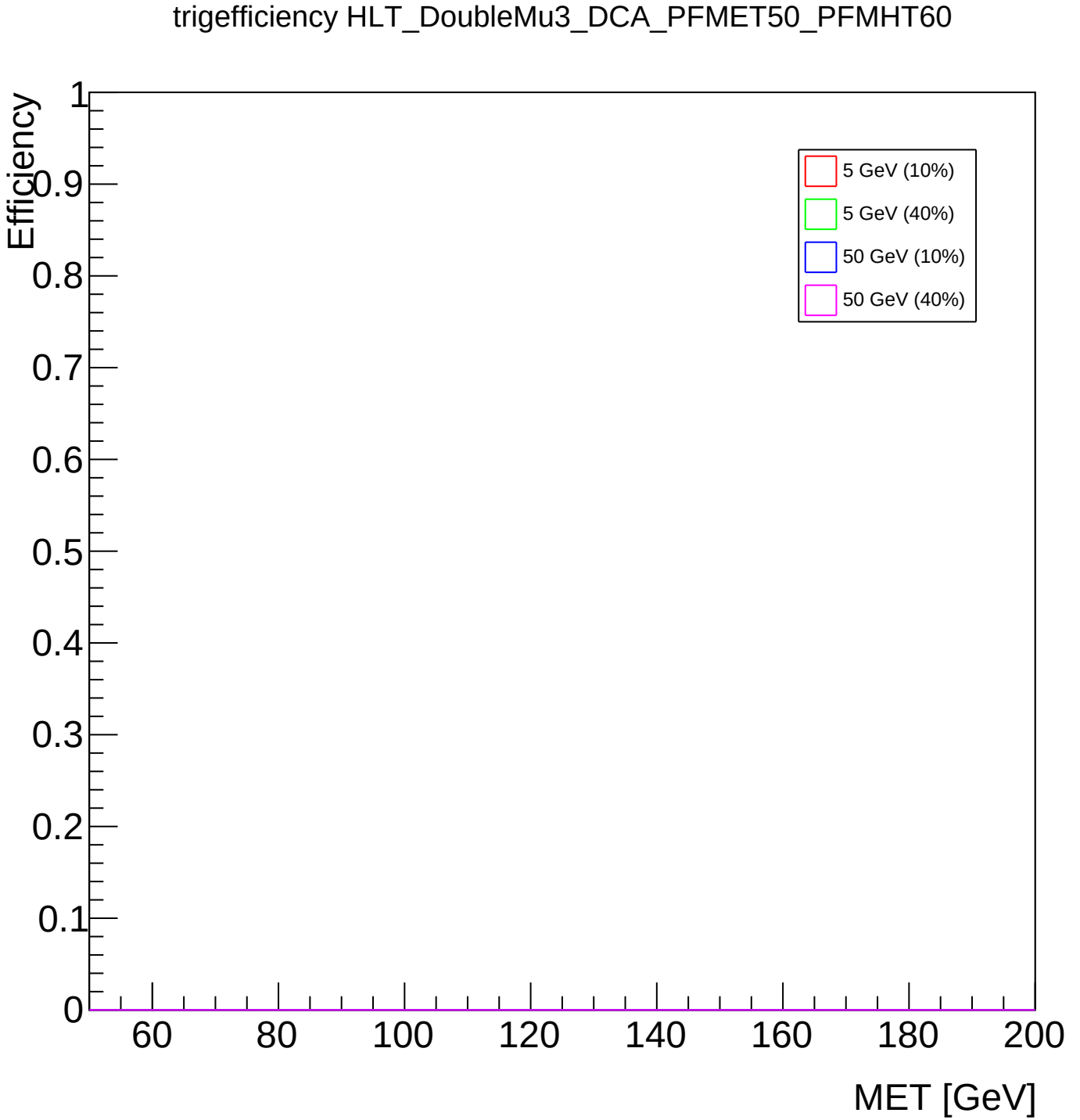
efficiencies

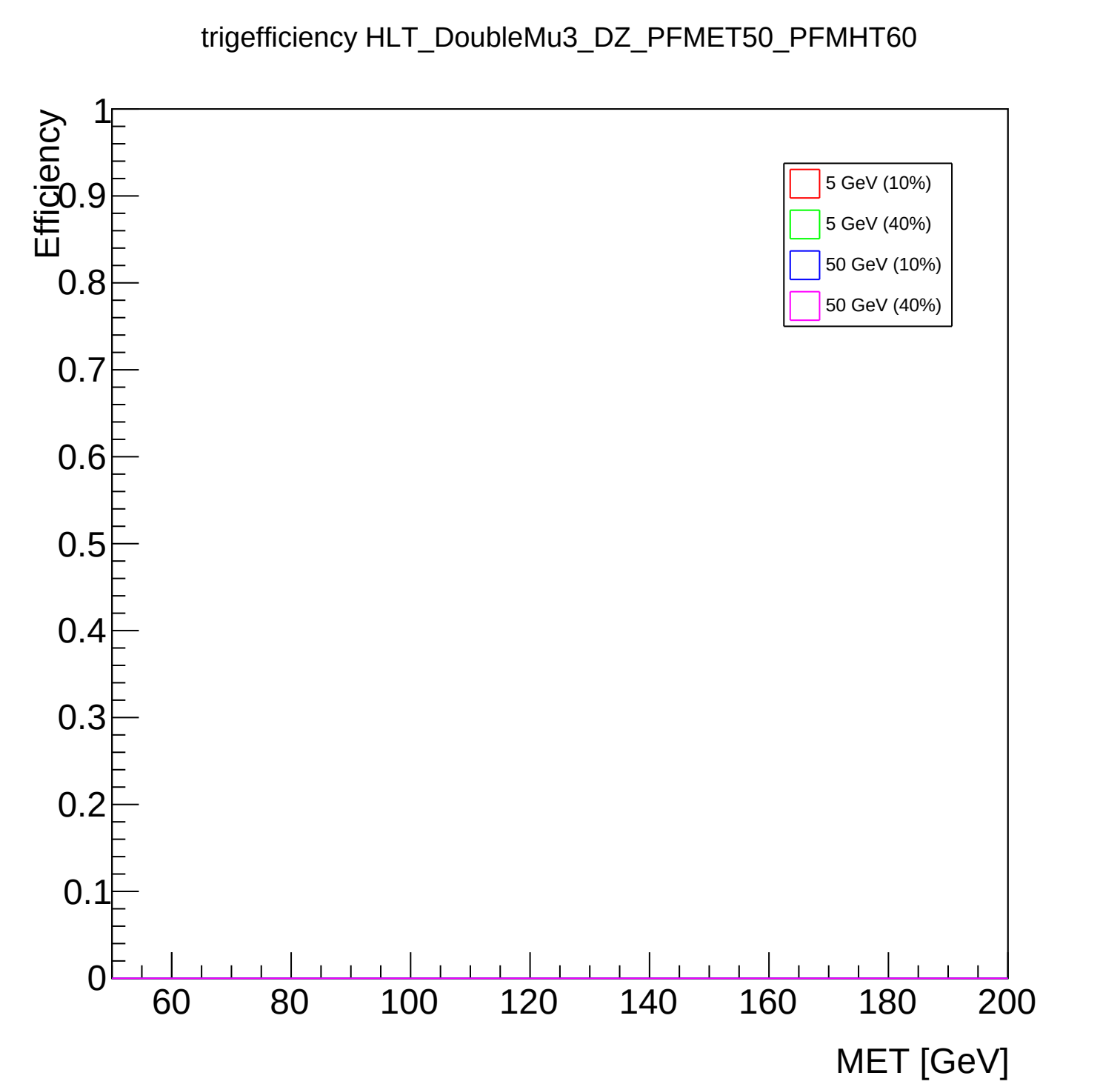

trigefficiency HLT_PFMET120_PFMHT120
Efficiency
Mu pt [GeV]
5 GeV (10%)
5 GeV (40%)
50 GeV (10%)
50 GeV (40%)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0
10
20
30
40
50
60
70
80

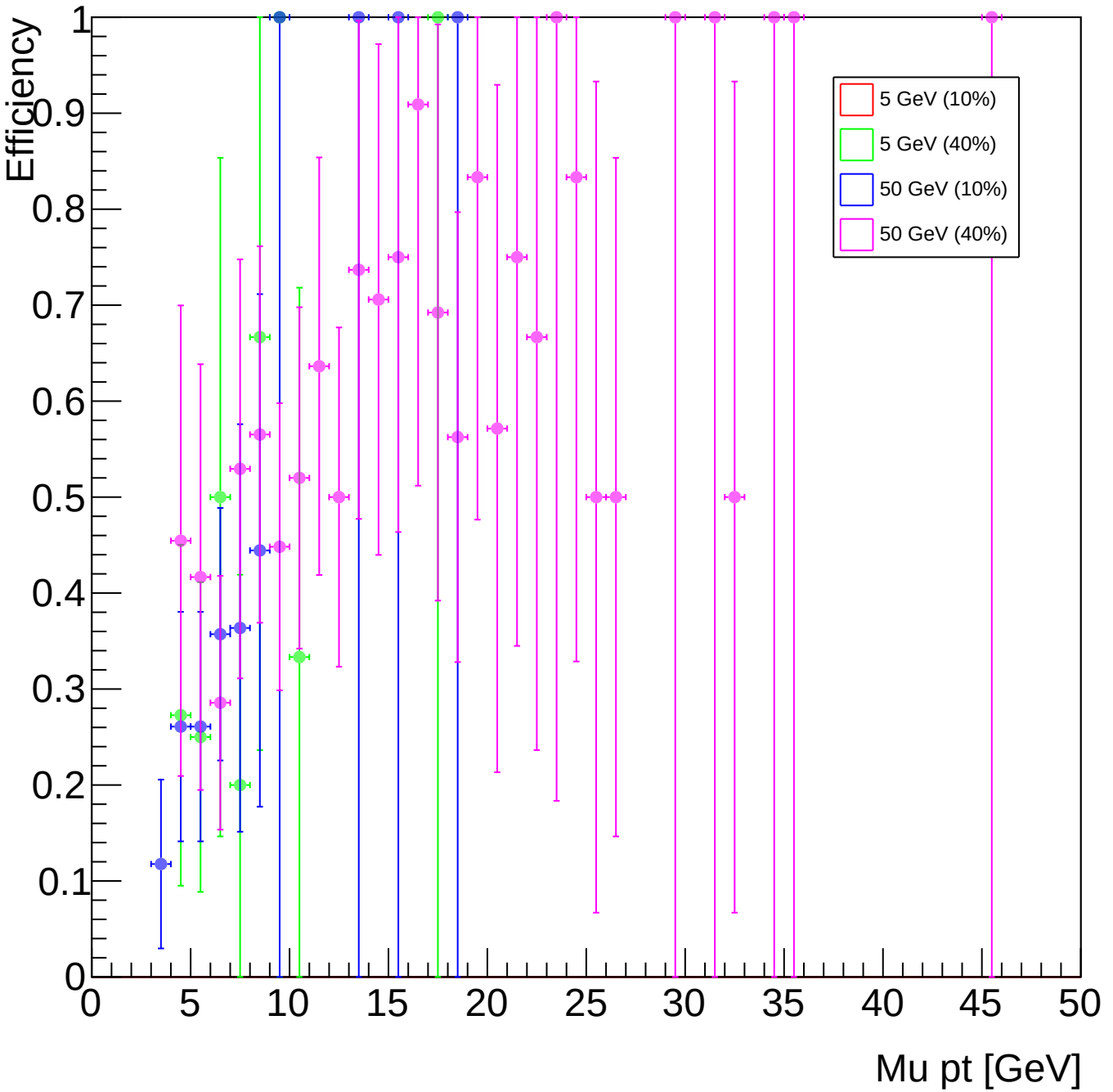

trigefficiency HLT_DoubleMu3_DCA_PFMET50_PFMHT60
Efficiency
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
10
20
30
40
50
60
70
80
Mu pt [GeV]
5 GeV (10%)
5 GeV (40%)
50 GeV (10%)
50 GeV (40%)

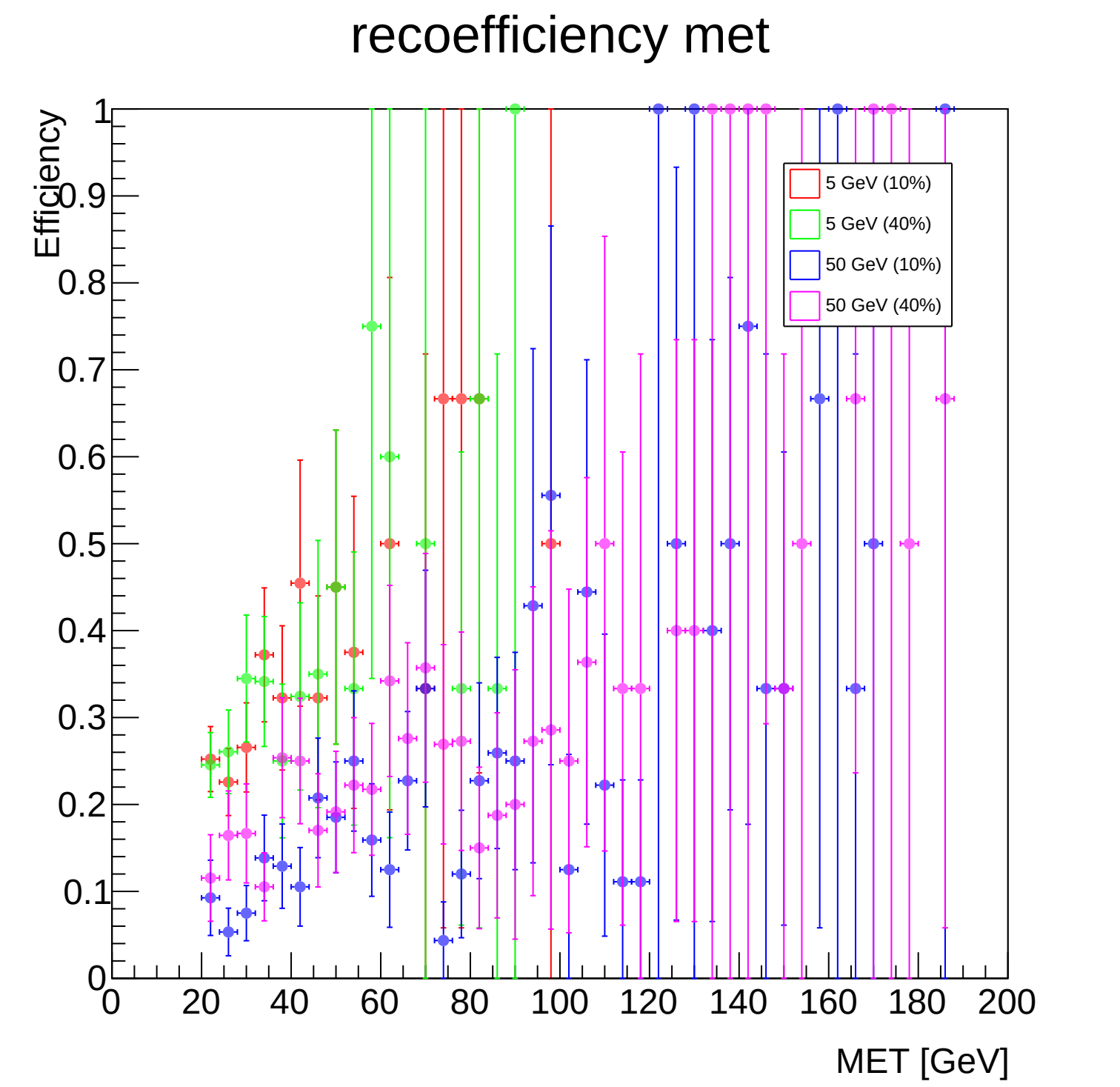

trigefficiency HLT_DoubleMu3_DZ_PFMET50_PFMHT60
Efficiency
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
10
20
30
40
50
60
70
80
Mu pt [GeV]
5 GeV (10%)
5 GeV (40%)
50 GeV (10%)
50 GeV (40%)

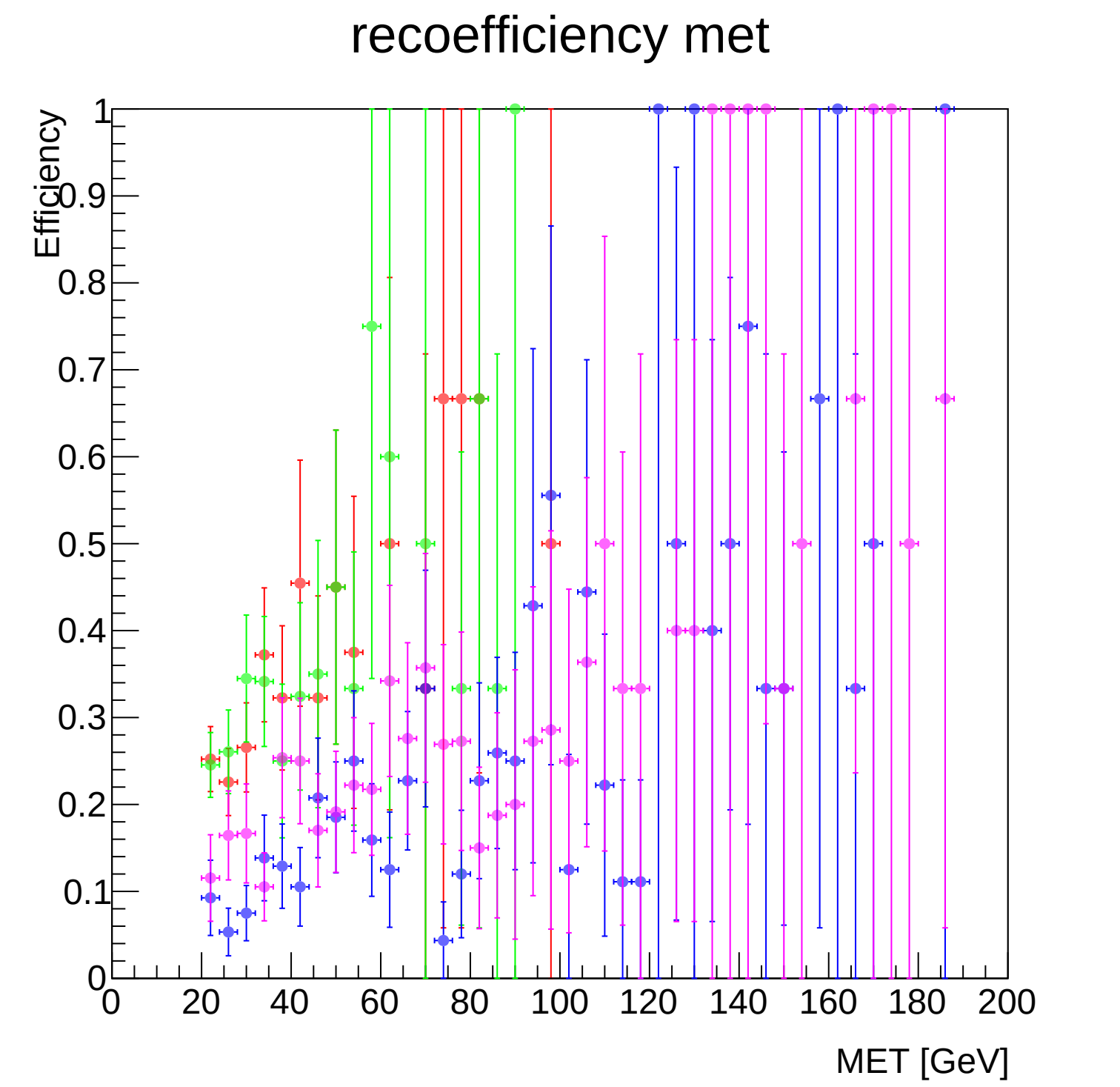

trigefficiency HLT_PFMET120_PFMHT120
Efficiency
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
120
130
140
150
160
170
180
190
200
MET [GeV]
5 GeV (10%)
5 GeV (40%)
50 GeV (10%)
50 GeV (40%)


trigefficiency HLT_DoubleMu3_DCA_PFMET50_PFMHT60
Efficiency
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5 GeV (10%)
5 GeV (40%)
50 GeV (10%)
50 GeV (40%)
60
80
100
120
140
160
180
200
MET [GeV]


trigefficiency HLT_DoubleMu3_DZ_PFMET50_PFMHT60
Efficiency
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
60
80
100
120
140
160
180
200
MET [GeV]
5 GeV (10%)
5 GeV (40%)
50 GeV (10%)
50 GeV (40%)


recoefficiency mu
Efficiency
Mu pt [GeV]
5 GeV (10%)
5 GeV (40%)
50 GeV (10%)
50 GeV (40%)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0
5
10
15
20
25
30
35
40
45
50


recoefficiency met
Efficiency
MET [GeV]
5 GeV (10%)
5 GeV (40%)
50 GeV (10%)
50 GeV (40%)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0
20
40
60
80
100
120
140
160
180
200


recoefficiency met
Efficiency
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
20
40
60
80
100
120
140
160
180
200
MET [GeV]