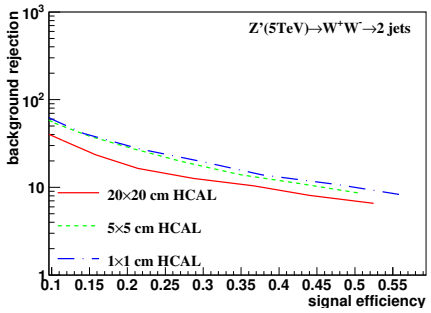
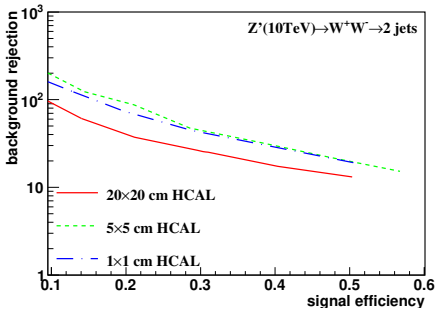
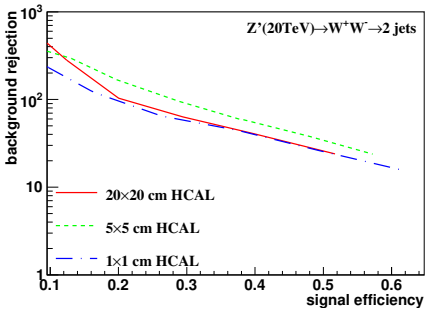


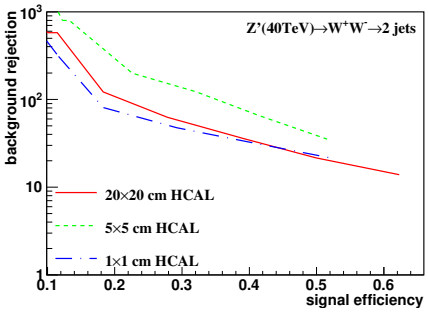
(a) 5 TeV in cluster



(b) 10 TeV in cluster



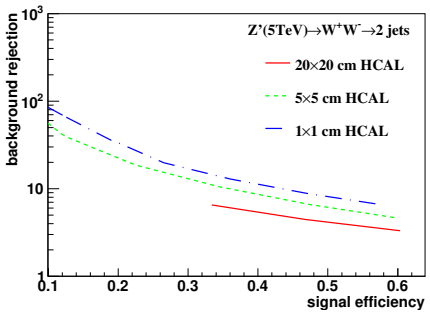
(c) 20 TeV in cluster



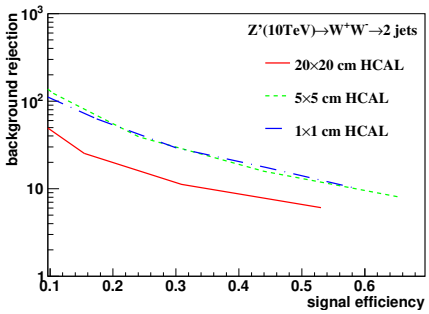
(d) 40 TeV in cluster

Figure 1: Signal efficiency versus background rejection rate using $c_2^{(1)}$.The energies of collision at (a)5, (b)10, (c)20, (d)40TeV are shown here. In each picture, the three ROC curves correspond to different detector sizes.

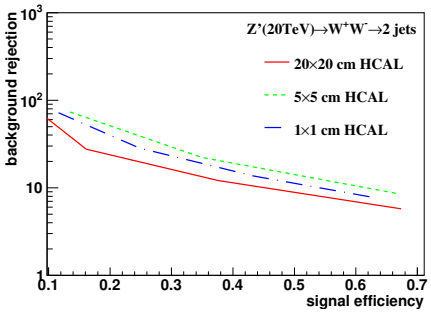
1. Studies of signal and background separation using Mann-Whitney U test and some new methods



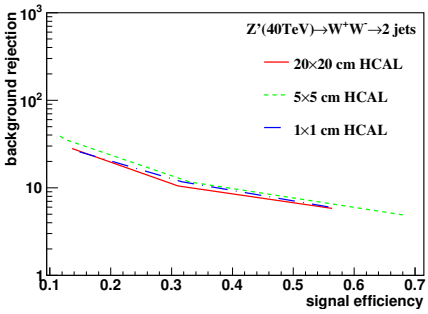
(a) 5 TeV rawhit cut at 0.5GeV compare with New2 Method



(b) 10 TeV rawhit cut at 0.5GeV compare with New2 Method

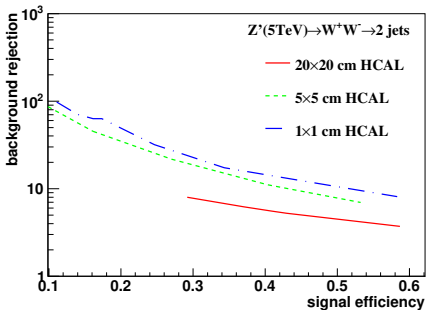


(c) 20 TeV rawhit cut at 0.5GeV compare with New2 Method

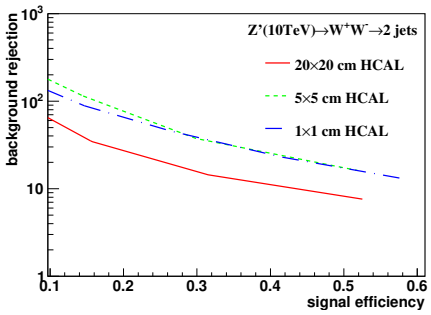


(d) 40 TeV rawhit cut at 0.5GeV compare with New2 Method

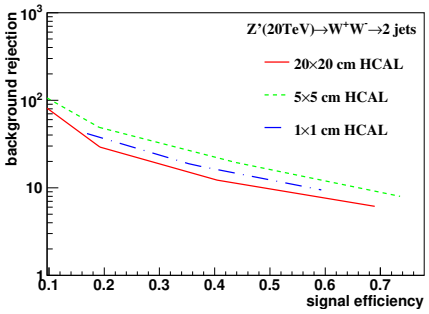
Figure 2: Signal efficiency versus background rejection rate using $c_2^{(1)}$.The energies of collision at (a)5, (b)10, (c)20, (d)40TeV are shown here. In each picture, the three ROC curves correspond to different detector sizes.



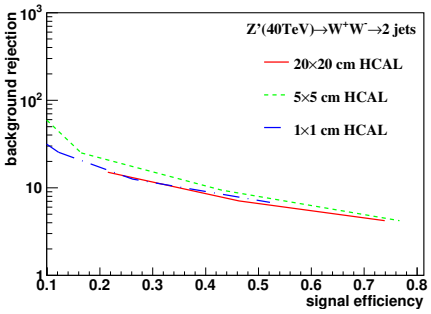
(a) 5 TeV rawhit cut at 0.25GeV compare with New2 Method



(b) 10 TeV rawhit cut at 0.25GeV compare with New2 Method

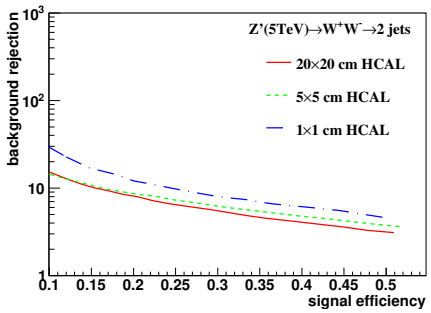


(c) 20 TeV rawhit cut at 0.25GeV compare with New2 Method

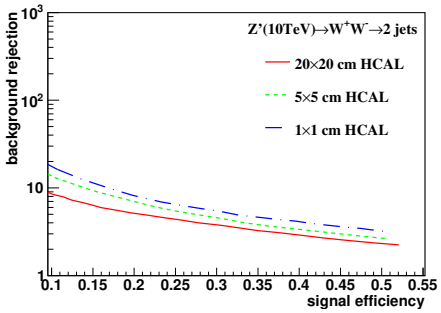


(d) 40 TeV rawhit cut at 0.25GeV compare with New2 Method

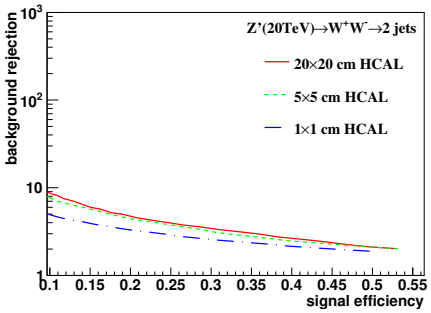
Figure 3: Signal efficiency versus background rejection rate using $c_2^{(1)}$.The energies of collision at (a)5, (b)10, (c)20, (d)40TeV are shown here. In each picture, the three ROC curves correspond to different detector sizes.



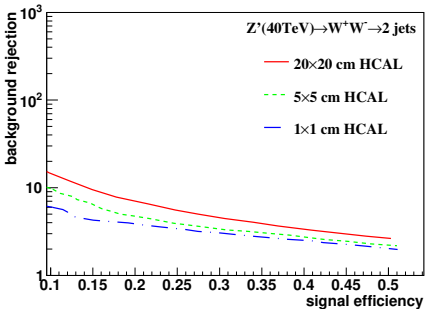
(a) 5 TeV in cluster



(b) 10 TeV in cluster

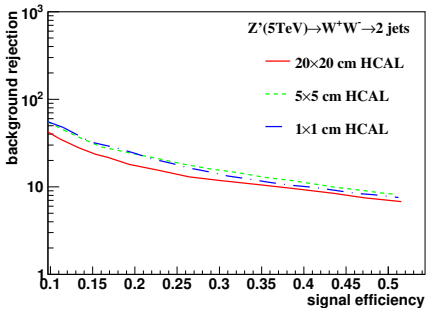


(c) 20 TeV in cluster

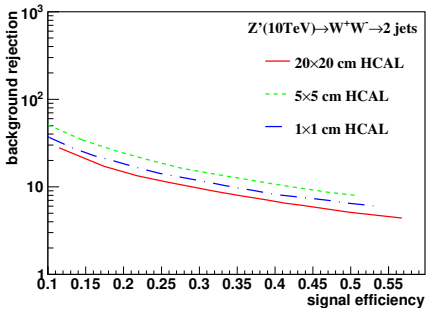


(d) 40 TeV in cluster

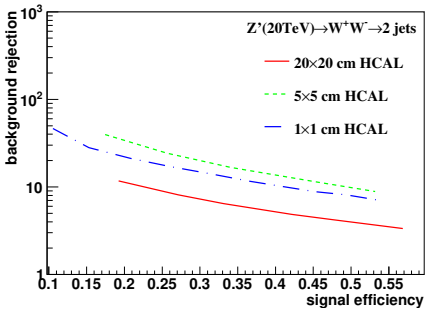
Figure 4: Signal efficiency versus background rejection rate using τ_{21}.The energies of collision at (a)5, (b)10, (c)20, (d)40TeV are shown here. In each picture, the three ROC curves correspond to different detector sizes.



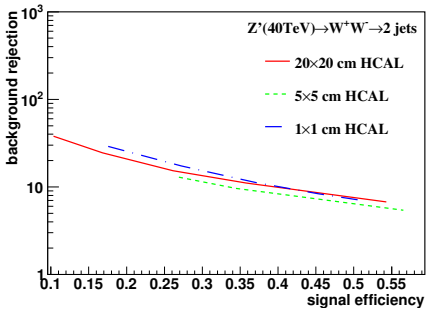
(a) 5 TeV rawhit cut at 0.5GeV compare with New2 Method



(b) 10 TeV rawhit cut at 0.5GeV compare with New2 Method

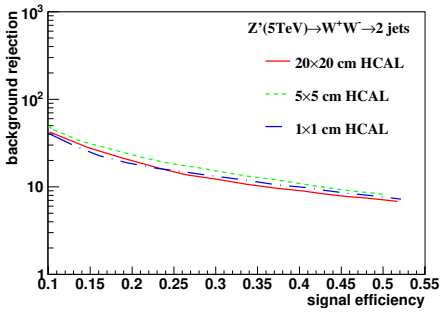


(c) 20 TeV rawhit cut at 0.5GeV compare with New2 Method

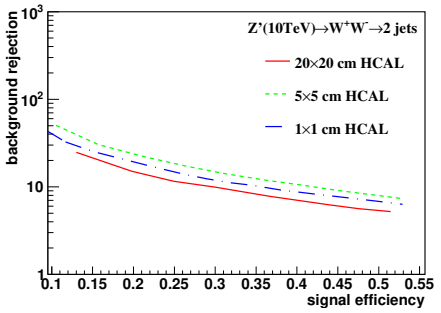


(d) 40 TeV rawhit cut at 0.5GeV compare with New2 Method

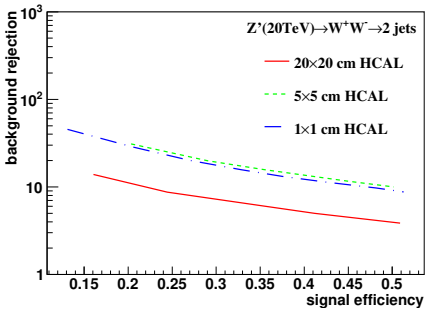
Figure 5: Signal efficiency versus background rejection rate using τ_{21}.The energies of collision at (a)5, (b)10, (c)20, (d)40TeV are shown here. In each picture, the three ROC curves correspond to different detector sizes.



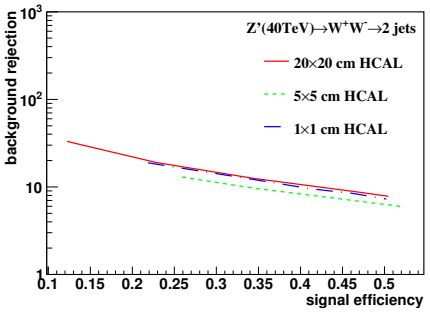
(a) 5 TeV rawhit cut at 0.25GeV compare with New2 Method



(b) 10 TeV rawhit cut at 0.25GeV compare with New2 Method

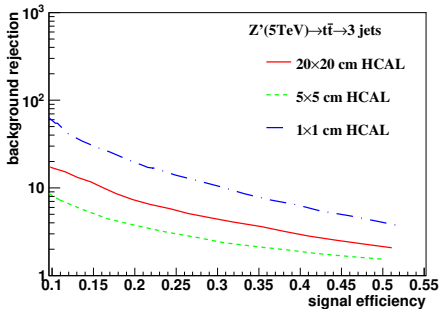


(c) 20 TeV rawhit cut at 0.25GeV compare with New2 Method

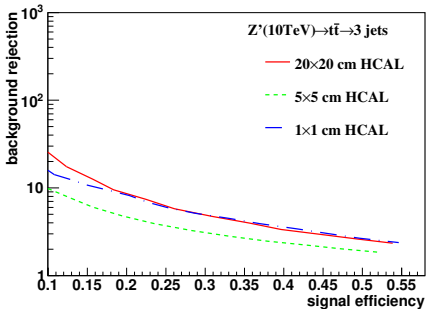


(d) 40 TeV rawhit cut at 0.25GeV compare with New2 Method

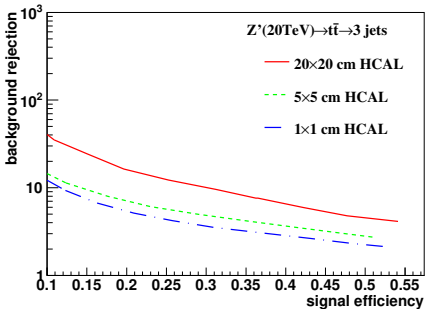
Figure 6: Signal efficiency versus background rejection rate using τ_{21}.The energies of collision at (a)5, (b)10, (c)20, (d)40TeV are shown here. In each picture, the three ROC curves correspond to different detector sizes.



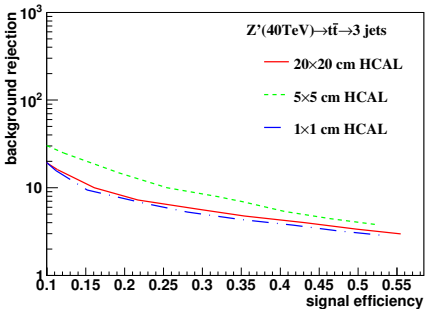
(a) 5 TeV in cluster



(b) 10 TeV in cluster

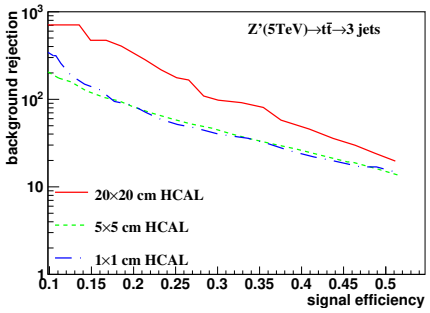


(c) 20 TeV in cluster

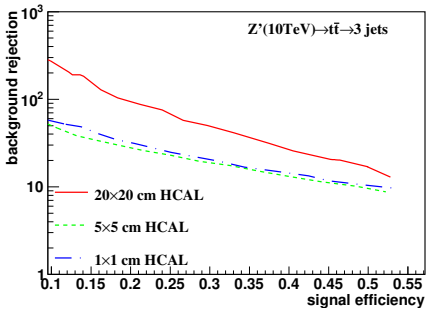


(d) 40 TeV in cluster

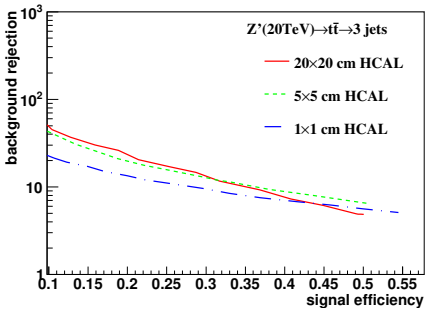
Figure 7: Signal efficiency versus background rejection rate using τ_{32}.The energies of collision at (a)5, (b)10, (c)20, (d)40TeV are shown here. In each picture, the three ROC curves correspond to different detector sizes.



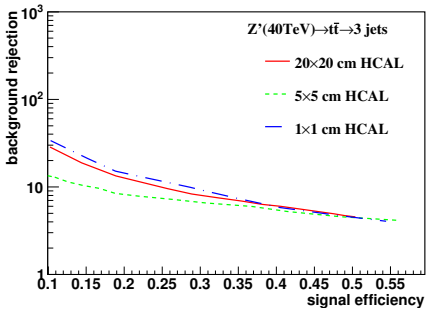
(a) 5 TeV rawhit cut at 0.25GeV compare with New2 Method



(b) 10 TeV rawhit cut at 0.25GeV compare with New2 Method

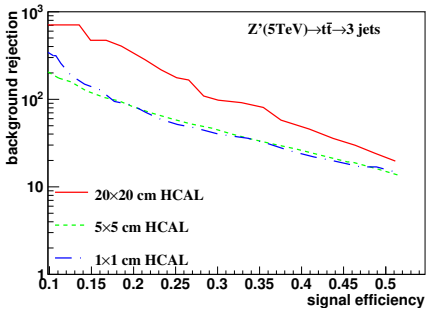


(c) 20 TeV rawhit cut at 0.25GeV compare with New2 Method

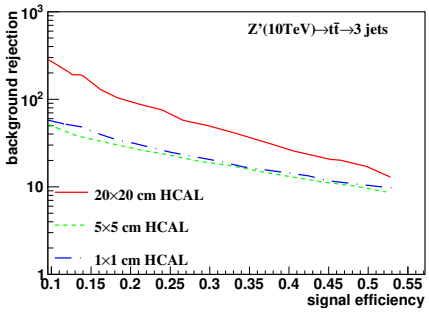


(d) 40 TeV rawhit cut at 0.25GeV compare with New2 Method

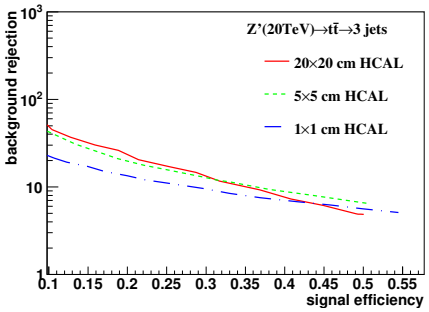
Figure 8: Signal efficiency versus background rejection rate using τ_{32}.The energies of collision at (a)5, (b)10, (c)20, (d)40TeV are shown here. In each picture, the three ROC curves correspond to different detector sizes.



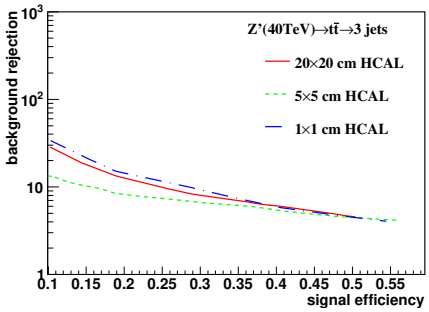
(a) 5 TeV rawhit cut at 0.25GeV compare with New2



(b) 10 TeV rawhit cut at 0.25GeV compare with New2



(c) 20 TeV rawhit cut at 0.25GeV compare with New2



(d) 40 TeV rawhit cut at 0.25GeV compare with New2

Figure 9: Signal efficiency versus background rejection rate using τ_{32}.The energies of collision at (a)5, (b)10, (c)20, (d)40TeV are shown here. In each picture, the three ROC curves correspond to different detector sizes.