

1. Soft drop method in future collider performance

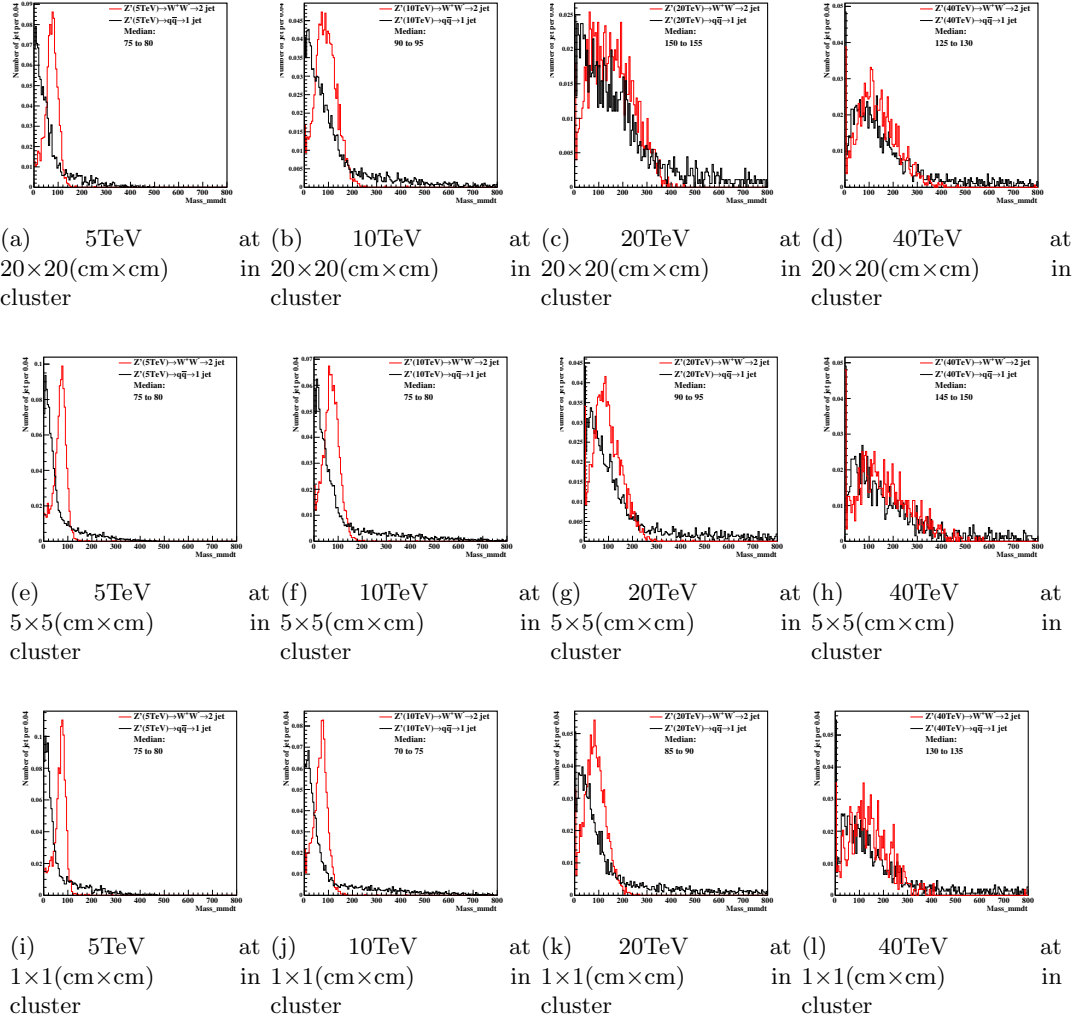
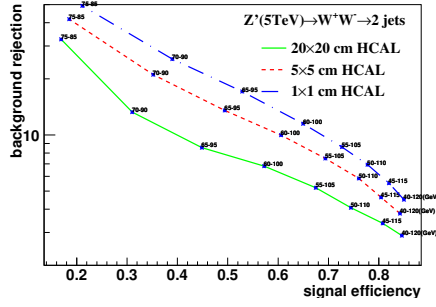
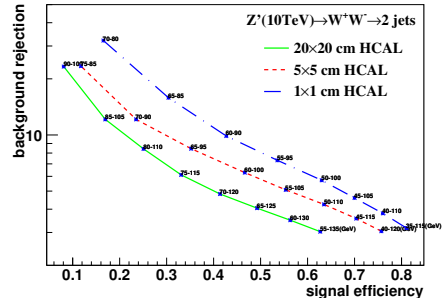


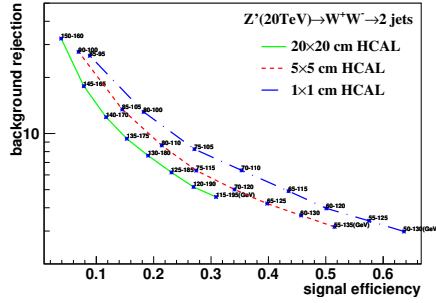
Figure 1: Distributions of mass soft drop at $\beta=0$, signal=ww, in 5,10TeV energy of collision in different detector sizes. Cell Size in 20 \times 20, 5 \times 5, and 1 \times 1(cm \times cm) are shown here.



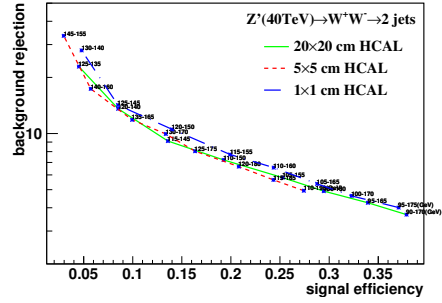
(a) Central at Median($20 \times 20=80, 5 \times 5=80, 1 \times 1=80$) change width in cluster at 5TeV



(b) Central at Median($20 \times 20=95, 5 \times 5=80, 1 \times 1=75$) change width in cluster at 10TeV



(c) Central at Median($20 \times 20=155, 5 \times 5=95, 1 \times 1=90$) change width in cluster at 20TeV



(d) Central at Median($20 \times 20=130, 5 \times 5=150, 1 \times 1=135$) change width in cluster at 40TeV

Figure 2: study of "fix central and change width" in mass soft drop at $\beta=0$, signal=ww, in 5, 10, 20, 40TeV energy of collision in different detector sizes. Cell Size in $20 \times 20, 5 \times 5$, and 1×1 (cm \times cm) are shown in each picture.

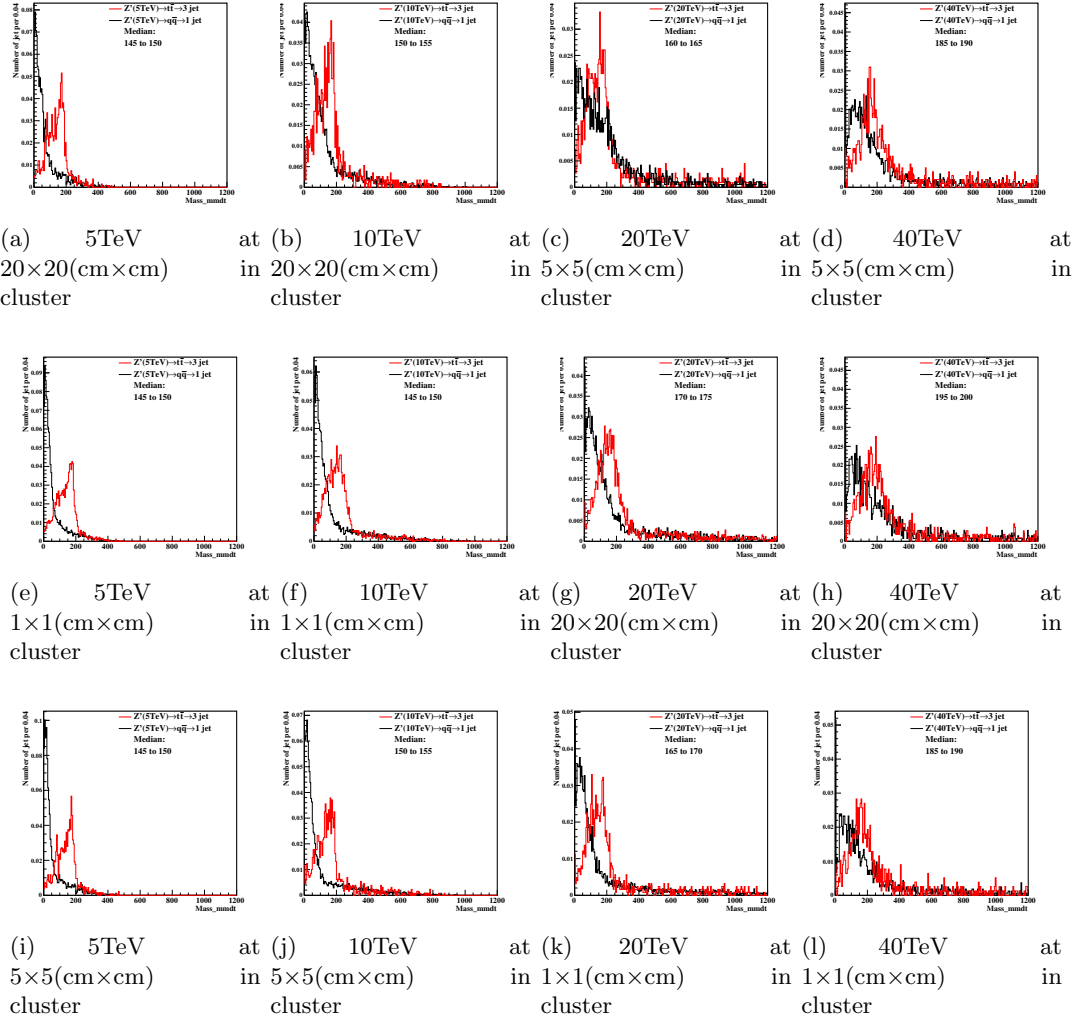
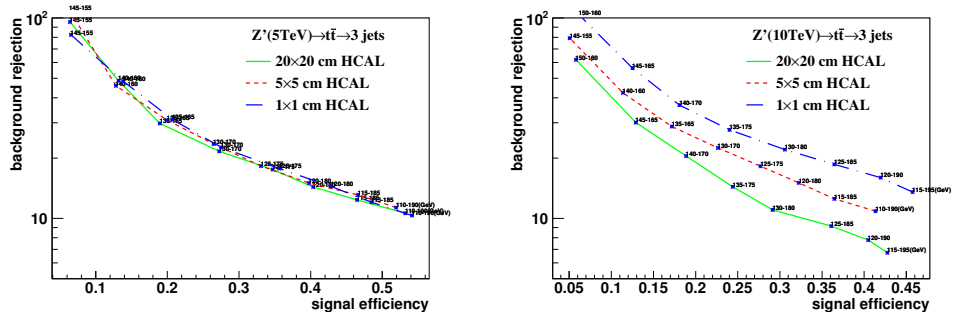
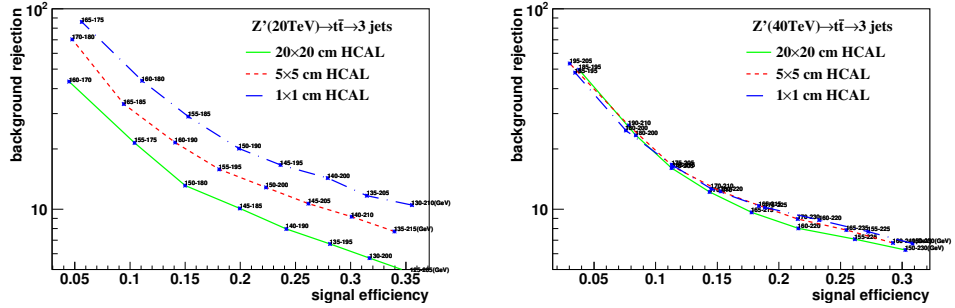


Figure 3: Distributions of mass soft drop at $\beta=0$, signal= tt , in 5,10TeV energy of collision in different detector sizes. Cell Size in 20 \times 20, 5 \times 5, and 1 \times 1(cm \times cm) are shown here.



(a) Central at Median($20 \times 20=150, 5 \times 5=150, 1 \times 1=150$) change width in cluster at 5TeV

(b) Central at Median($20 \times 20=155, 5 \times 5=150, 1 \times 1=155$) change width in cluster at 10TeV



(c) Central at Median($20 \times 20=165, 5 \times 5=175, 1 \times 1=170$) change width in cluster at 20TeV

(d) Central at Median($20 \times 20=190, 5 \times 5=200, 1 \times 1=190$) change width in cluster at 40TeV

Figure 4: study of "fix central and change width" in mass soft drop at $\beta=0$, signal= $t\bar{t}$, in 5, 10, 20, 40TeV energy of collision in different detector sizes. Cell Size in 20×20 , 5×5 , and 1×1 (cm \times cm) are shown in each picture.

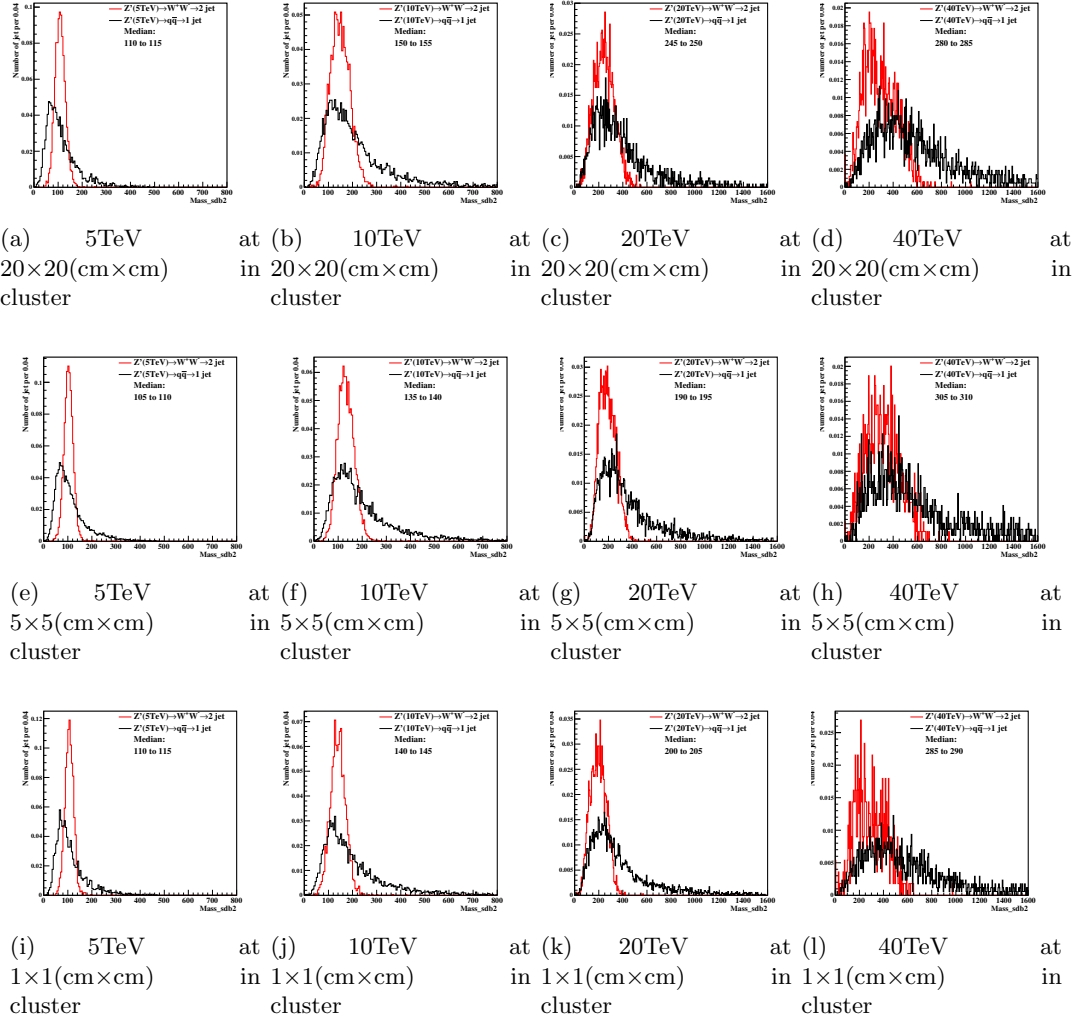
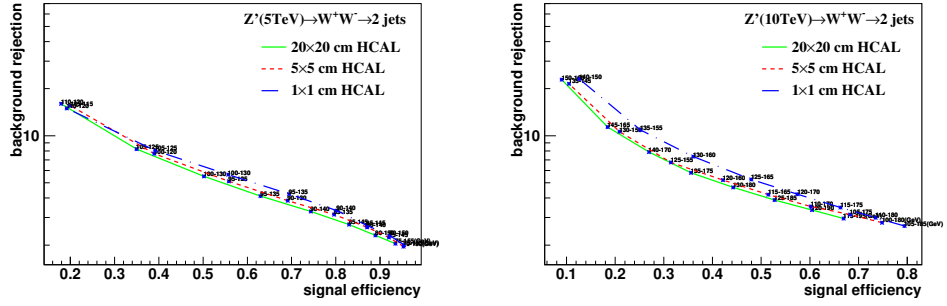
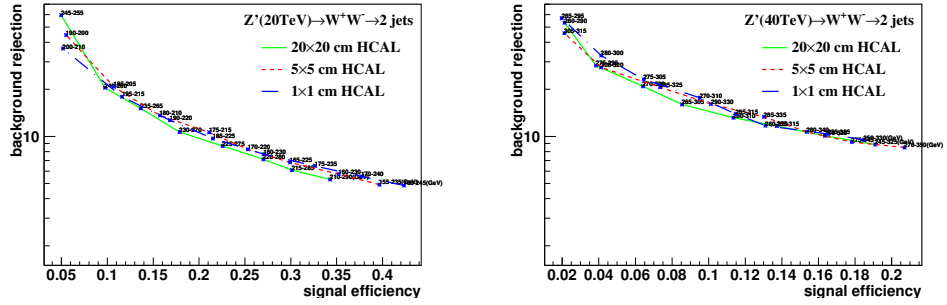


Figure 5: Distributions of mass soft drop at $\beta=2$, signal=ww, in 5,10TeV energy of collision in different detector sizes. Cell Size in 20×20, 5×5, and 1×1(cm×cm) are shown here.



(a) Central at Median($20 \times 20=115,5 \times 5=110,1 \times 1=115$) change width in cluster at 5TeV (b) Central at Median($20 \times 20=155,5 \times 5=140,1 \times 1=145$) change width in cluster at 10TeV



(c) Central at Median($20 \times 20=250,5 \times 5=195,1 \times 1=205$) change width in cluster at 20TeV (d) Central at Median($20 \times 20=285,5 \times 5=310,1 \times 1=290$) change width in cluster at 40TeV

Figure 6: study of "fix central and change width" in mass soft drop at $\beta=2$, signal=ww, in 5, 10, 20, 40TeV energy of collision in different detector sizes. Cell Size in 20×20 , 5×5 , and 1×1 (cm \times cm) are shown in each picture.

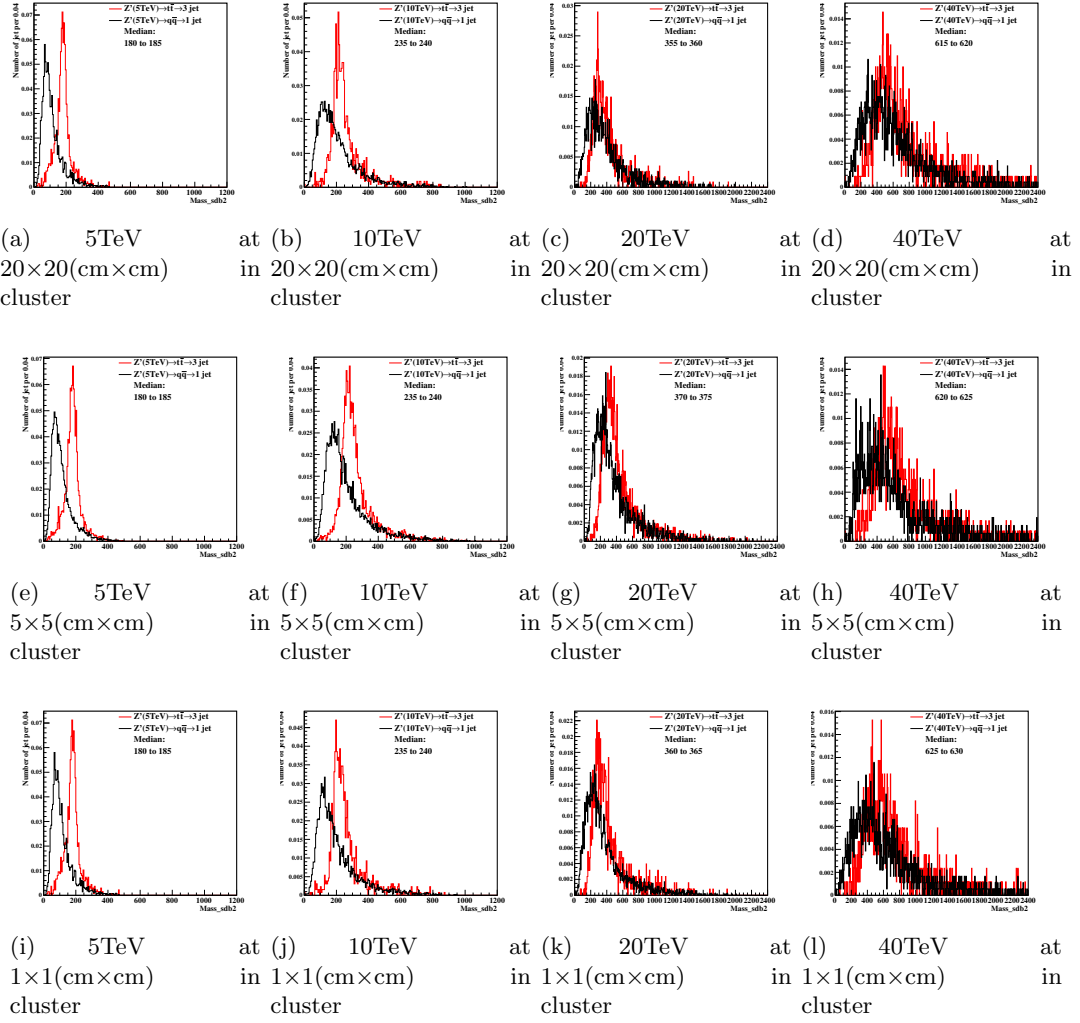
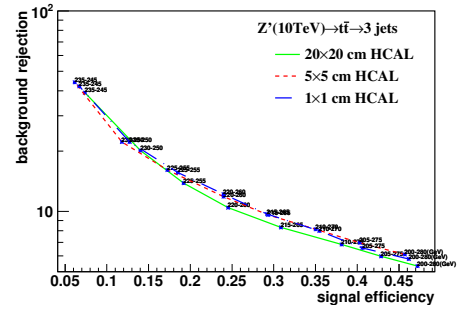
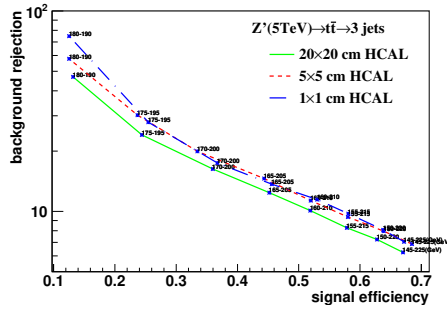
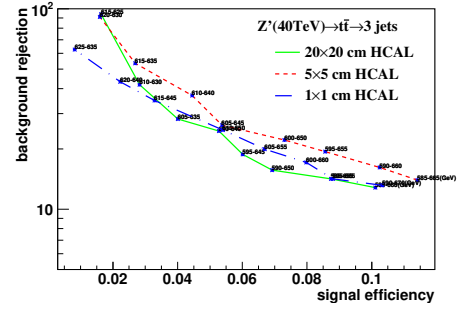
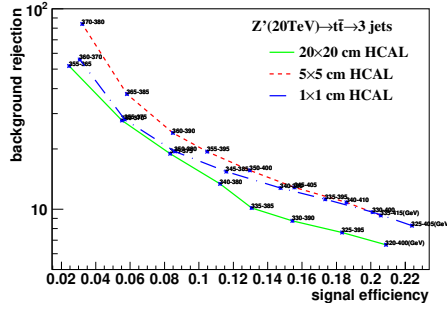


Figure 7: Distributions of mass soft drop at $\beta=2$, signal= tt , in 5, 10 TeV energy of collision in different detector sizes. Cell Size in 20×20, 5×5, and 1×1(cm×cm) are shown here.



(a) Central at Median($20 \times 20=185,5 \times 5=185,1 \times 1=185$) change width in cluster at 5TeV (b) Central at Median($20 \times 20=240,5 \times 5=240,1 \times 1=240$) change width in cluster at 10TeV



(c) Central at Median($20 \times 20=360,5 \times 5=375,1 \times 1=365$) change width in cluster at 20TeV (d) Central at Median($20 \times 20=620,5 \times 5=625,1 \times 1=630$) change width in cluster at 40TeV

Figure 8: study of "fix central and change width" in mass soft drop at $\beta=2$, signal= $t\bar{t}$, in 5, 10, 20, 40TeV energy of collision in different detector sizes. Cell Size in 20×20 , 5×5 , and 1×1 (cm \times cm) are shown in each picture.