

tHToZZ

Selection of 5 isolated leptons

Dataset	nevt for 100fb-1	rel. incert.	nlep max
tHToZZ-Kappa-hct	4.1821	14.74%	5
tHToZZ-Kappa-gct	4.0912	14.91%	5
tHToZZ-Kappa-gut	3.0912	17.15%	5
tHToZZ-Kappa-hut	1.9092	21.82%	5
ZHToZZ	0.0466	70.71%	6
WHToZZ	0.0434	100.00%	5
TTdilep_WZToLLLLNu_madspin	0.0273	2.10%	5
TTdilep_ZZToLLLL_madspin	0.0159	1.11%	6
TTsemilep_ZZToLLLL_madspin_1	0.0115	1.88%	5
TTsemilep_ZZToLLLL_madspin_2	0.0114	1.89%	5
TTdilep_ZToLL_madspin	0.0080	100.00%	4
TTdilep_WWToLLNuNu_madspin	0.0001	100.00%	4
TTsemilep_WZToLLLLNu_madspin_1	2.5e-05	70.71%	4

signal
(xs = 1pb)

xs with BR
limit

Signal	xs with BR limit [pb]	nevt for 100fb-1
tHToZZ-Kappa-hct	0.0145	0.0605
tHToZZ-Kappa-gct	0.00021	0.0009
tHToZZ-Kappa-gut	0.00165	0.0051
tHToZZ-Kappa-hut	0.1170	0.2232

Datasets passing 4 leptons but not 5 leptons cut

Dataset	nlep max
TTsemilep_ZToLL_madspin_2	3
TTsemilep_ZToLL_madspin_1	3
ZHToWW	4
HToZZ	4
WZToLLLLNu	3
TTsemilep_WWToLLNuNu_madspin_2	3
TTsemilep_WWToLLNuNu_madspin_1	3

Signal and many backgrounds suffer a lot from a lack of statistics. Notably due to asking $H \rightarrow ZZ$ without requiring 4L.

Very low expected signal rate, even with a 4 leptons selection. Will check for $ZZ \rightarrow lljj$.

Selection of 4 isolated leptons

Dataset	nevt for 100fb-1	rel. incert.
TTdilep_ZToLL_madspin	63.0726547241	1.13%
tHToZZ-Kappa-hct	49.5499572754	4.28%
tHToZZ-Kappa-gct	43.3671455383	4.58%
tHToZZ-Kappa-gut	31.8213348389	5.35%
tHToZZ-Kappa-hut	24.4570350647	6.10%
TTsemilep_ZToLL_madspin_2	9.49560928345	4.20%
TTsemilep_ZToLL_madspin_1	9.07546901703	4.30%
ZHToWW	5.71080827713	18.26%
ZHToZZ	1.60994207859	12.04%
HToZZ	1.22739052773	100.00%
WHToZZ	0.694424569607	25.00%
TTdilep_WWToLLNuNu_madspin	0.462979376316	1.54%
TTdilep_WZToLLLLNu_madspin	0.162783518434	0.86%
TTsemilep_WZToLLLLNu_madspin_1	0.113158412278	1.06%
TTsemilep_ZZToLLLL_madspin_2	0.0560129694641	0.86%
TTsemilep_ZZToLLLL_madspin_1	0.0549993366003	0.86%
TTdilep_ZZToLLLL_madspin	0.048358399421	0.64%
WZToLLLLNu	0.0382276326418	70.71%
TTsemilep_WWToLLNuNu_madspin_2	0.0145742138848	12.50%
TTsemilep_WWToLLNuNu_madspin_1	0.0120702413842	13.74%

signal xs = 1 pb

WHToCC	-1	-1
ZToLL50-4Jets sm-no masses split	-1	-1
WHToTauTau	-1	-1
ZZToNuNuJJ	-1	-1
ZHToTauTau	-1	-1
WHToGG	-1	-1
ZHToGG	-1	-1
HToCC	-1	-1
HToTauTau	0.0	0.00%
TTdilep madspin	0.0	0.00%
TTsemilep WToLNu madspin 2	0.0	0.00%
TTdilep WToLNu madspin	0.0	0.00%
ZToLL10-50-3Jets sm-no masses	0.0	0.00%
ZZTo4Nu	0.0	0.00%
WZToLLJJ	0.0	0.00%
SingleTop W madspin	0.0	0.00%
ZZToLLNuNu	0.0	0.00%
HToAA	0.0	0.00%
ZToLL50-0Jet sm-no masses	0.0	0.00%
HToWW	0.0	0.00%
ZToLL10-50-0Jet sm-no masses	0.0	0.00%
WHTobb	0.0	0.00%
WToLNu-0Jet sm-no masses	0.0	0.00%
WWToLLNuNu	0.0	0.00%
TZq madspin dilep	0.0	0.00%
ZToLL10-50-2Jets sm-no masses	0.0	0.00%
ZToLL10-50-1Jet sm-no masses	0.0	0.00%
ZToNuNu-2Jets sm-no masses	0.0	0.00%
ZToNuNu-3Jets sm-no masses split	0.0	0.00%
WHToAA	0.0	0.00%
TTsemilep WToLNu madspin 1	0.0	0.00%
WHToWW	0.0	0.00%
TTsemilep madspin 1	0.0	0.00%
WToLNu-1Jet sm-no masses	0.0	0.00%
WZToNuNuJJ	0.0	0.00%
WToLNu-2Jets sm-no masses	0.0	0.00%
TTsemilep madspin 2	0.0	0.00%
WZToLLNuNuNu	0.0	0.00%
ZToLL50-1Jet sm-no masses	0.0	0.00%
SingleTop s madspin	0.0	0.00%
ZHToAA	0.0	0.00%
ZToNuNu-0Jet sm-no masses	0.0	0.00%
ZToLL50-2Jets sm-no masses	0.0	0.00%
TZq madspin monolep met	0.0	0.00%
ZHTobb	0.0	0.00%
ZToLL50-3Jets sm-no masses split	0.0	0.00%
HToBB	0.0	0.00%
ZToNuNu-1Jet sm-no masses	0.0	0.00%
WToLNu-3Jets sm-no masses	0.0	0.00%
SingleTop t madspin	0.0	0.00%