

- $\sqrt{s} = 500 \text{ GeV}$ ,  $M_H = 125 \text{ GeV}$ ,  $(P_{e^-}, P_{e^+}) = (-0.8, +0.3)$
- ttH production cross section  
 $0.485(\text{fb}) * \text{K-factor} = 0.485(\text{fb}) * 0.843 = 0.4088$

no K factor, tbW cross section

Process	$\sigma$ (fb)
$e^-e^+ \rightarrow tth$	0.485
$e^-e^+ \rightarrow ttZ$	1.974
$e^-e^+ \rightarrow ttg(bb)$	1.058
$e^-e^+ \rightarrow tbW$	979.8

with K factor, 6f cross section

Process	$\sigma$ (fb)
$e^-e^+ \rightarrow tth$	0.4088
$e^-e^+ \rightarrow ttZ$	1.974
$e^-e^+ \rightarrow ttg(bb)$	1.058
$e^-e^+ \rightarrow 6f$	912.5

- Expected # of signals and Backgrounds(@500fb<sup>-1</sup>)

ttH(tt→6j, H→bb)	63.9
ttH(tt→lv4j, H→bb)	61.3
ttH(tt→lvlv2j, H→bb)	14.6
ttH(tt→all, H(nobb))	102.6
ttZ	987
ttg(bb)	529
tbW	489902

ttH(tt→6j, H→bb)	53.9
ttH(tt→lv4j, H→bb)	51.6
ttH(tt→lvlv2j, H→bb)	12.3
ttH(tt→all, H(nobb))	86.4
ttZ	987
ttg(bb)	529
6f	456278

# Significance

- $\sqrt{s} = 500 \text{ GeV}$ ,  $L=500 \text{ fb}^{-1}$ ,  $(P_{e^-}, P_{e^+})=(-0.8,+0.3)$

	ttH→8jet		ttH→lv6jet		ttH→2l2v4jet	
Process	previous	current	previous	current	previous	current
ttH (not Signal)	0.42	0.426	0.25	0.208	0.06	0.0529
ttZ	7.17	8.45	5.19	5.12	1.41	1.29
ttbb	2.59	3.15	2.04	2.01	0.54	0.489
6f	19.24	19.4	8.39	8.80	1.88	1.72
<b>bkgd total</b>	<b>29.43</b>	<b>31.43</b>	<b>15.88</b>	<b>16.15</b>	<b>3.91</b>	<b>3.55</b>
<b>Signal</b>	<b>14.37</b>	<b>12.86</b>	<b>10.26</b>	<b>8.55609</b>	<b>2.62</b>	<b>2.09</b>
<b>MH rang (GeV)</b>	<b>(95,160)</b>	<b>(90,150)</b>	<b>(95,160)</b>	<b>(95,155)</b>	<b>(100,155)</b>	<b>(105,155)</b>

$(P_{e^-}, P_{e^+})$	previous	current
Lumi. ( $\text{fb}^{-1}$ )	500	500
8 jets	2.17	1.93
lv + 6 jets	2.00	1.72
2l2v + 4 jets	1.02	0.879

**previous:** cross section of 6f sample is slightly larger than the current number. without K-factor for ttH.

2b tagged category is used for 6f shape.

**current:** xsec is dbd official(whizard).

4b tagged category is used for 6f shape with K-factor = 0.843 for the ttH