

Single Higgs backgrounds for $HH \rightarrow 4b$

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Sample	LO	NLO	K	Ref
ZH (13 TeV)	$6.468 \cdot 10^{-1}$ pb	$7.674 \cdot 10^{-1}$ pb	1.186	[1]
ttH (13 TeV)	$3.579 \cdot 10^{-1}$ pb	$4.608 \cdot 10^{-1}$ pb	1.287	[1]
bbH (13 TeV)	$4.983 \cdot 10^{-1}$ pb	$6.085 \cdot 10^{-1}$ pb	1.221	[1]

Table 1: NLO K-factors for single Higgs backgrounds.

Sample	Decay	BF	Ref
ZH	$(Z \rightarrow b\bar{b})(H \rightarrow b\bar{b})$	0.0861	[2]
ttH	$(W \rightarrow q\bar{q})^2(H \rightarrow b\bar{b})$	0.259	[2]
bbH	$H \rightarrow b\bar{b}$	0.57	[2]

Table 2: Branching fractions for single Higgs backgrounds.

Sample	Boosted (fb)	Intermediate (fb)	Resolved (fb)
ZH	$2.014 \cdot 10^{-2}$	$1.208 \cdot 10^{-1}$	$7.490 \cdot 10^{-1}$
ttH	$5.058 \cdot 10^{-2}$	$6.325 \cdot 10^{-3}$	$4.054 \cdot 10^{-1}$
bbH	$2.282 \cdot 10^{-3}$	$5.548 \cdot 10^{-3}$	$2.609 \cdot 10^{-1}$
HH	$3.556 \cdot 10^{-1}$	$2.238 \cdot 10^{-1}$	$1.237 \cdot 10^0$
QCD	$2.533 \cdot 10^2$	$1.771 \cdot 10^2$	$4.866 \cdot 10^3$

Table 3: OHH4b analysis results (noPU, pre-MVA).

1 Cutflows

References

- [1] J. Alwall *et al.*, “The automated computation of tree-level and next-to-leading order differential cross sections, and their matching to parton shower simulations,” JHEP **1407** (2014) 079 doi:10.1007/JHEP07(2014)079 [arXiv:1405.0301 [hep-ph]].
- [2] K. A. Olive *et al.* [Particle Data Group Collaboration], Chin. Phys. C **38** (2014) 090001. doi:10.1088/1674-1137/38/9/090001