

Process	MC generator (order)	Cross section order
ggHH	MADGRAPH5_aMC@NLO v2 (LO) [71,72] POWHEG v2 (NLO) [73,74,75]	NNLO FT _{approx}
qqHH	MADGRAPH5_aMC@NLO v2 (LO)	N3LO
Single H boson production		
(via gluon fusion)	POWHEG v2 (NLO) [76]	N3LO QCD, NLO EW
(via vector boson fusion)	POWHEG v2 (NLO) [77]	NNLO QCD, NLO EW
(with a W or a Z boson)	POWHEG v2 (NLO) [78]	NNLO QCD, NLO EW
(with a pair of top quarks)	MADGRAPH5_aMC@NLO v2 (NLO)	NLO QCD, NLO EW
(with a single top quark)	MADGRAPH5_aMC@NLO v2 (LO)	NLO
W	MADGRAPH5_aMC@NLO v2 (LO)	NNLO
Z	MADGRAPH5_aMC@NLO v2 (LO)	NNLO QCD, NLO EW
WW (double-parton interaction)	PYTHIA v8.2 (LO)	LO
(same-sign pair)	MADGRAPH5_aMC@NLO v2 (LO)	LO
(opposite-sign pair)	POWHEG v2 (NLO) [79,80]	NNLO
WZ	MADGRAPH5_aMC@NLO v2 (NLO)	NNLO
ZZ (quark-initiated)	POWHEG v2 (NLO) [79,80]	NNLO
(gluon-initiated)	MCFM v7 (LO) [81]	NLO
$W\gamma, Z\gamma, WZ\gamma, t\gamma, t\bar{t}\gamma$	MADGRAPH5_aMC@NLO v2 (NLO)	NLO
WWW, WWZ, WZZ, ZZZ	MADGRAPH5_aMC@NLO v2 (NLO)	NLO
Single top	POWHEG v2 (NLO) [82]	NLO
(with a W boson)	POWHEG v2 (NLO) [83]	NLO
(with a Z boson)	MADGRAPH5_aMC@NLO v2 (NLO)	NLO
$t\bar{t}$	POWHEG v2 (NLO) [84]	NNLO
$t\bar{t}\bar{t}$	MADGRAPH5_aMC@NLO v2 (NLO)	NLO
$t\bar{t}W$	MADGRAPH5_aMC@NLO v2 (NLO QCD, NLO EW)	NLO QCD, NLO EW
$t\bar{t}Z$	MADGRAPH5_aMC@NLO v2 (NLO)	NLO QCD, NLO EW
$t\bar{t}WW, t\bar{t}WZ, t\bar{t}ZZ$	MADGRAPH5_aMC@NLO v2 (LO)	LO