

Process	Details	Generator	Generator order	Cross section order
$Z(\rightarrow \ell^+\ell^-) + \text{jets}$	$M_{\ell^+\ell^-} > 10 \text{ GeV}$	MADGRAPH	NLO	NNLO
	$p_T(Z) > 50 \text{ GeV}$	MADGRAPH	NLO	NNLO
	$M_{\ell^+\ell^-} > 120 \text{ GeV}$	POWHEG	NLO	NNLO
$Z(\rightarrow \nu\nu) + \text{jets}$		MADGRAPH	LO	NLO
$W(\rightarrow \ell\nu) + \text{jets}$	Inclusive	MADGRAPH	NLO	NNLO
	$p_T(W) > 100 \text{ GeV}$	MADGRAPH	NLO	NNLO
	$M_{\ell\nu} > 200 \text{ GeV}$	PYTHIA 8	LO	NNLO
$\gamma + \text{jets}$		MADGRAPH	LO	LO
$t\bar{t}$	Inclusive	POWHEG	NLO	NNLO
	$M_{t\bar{t}} > 700 \text{ GeV}$	POWHEG	NLO	NNLO
	$t\bar{t}\gamma$	MADGRAPH	NLO	NLO
	$t\bar{t}W$	MADGRAPH	NLO	NLO
	$t\bar{t}Z$	MADGRAPH	NLO	NLO
	$t\bar{t}\gamma\gamma$	MADGRAPH	NLO	NLO
			MADGRAPH	NLO
$t\bar{t}\bar{t}$				
Top	t (tW-channel)	POWHEG	NLO	NLO
	t (t-channel)	POWHEG	NLO	NLO
	t (s-channel)	MADGRAPH	NLO	NLO
	$t\gamma$	MADGRAPH	NLO	NLO
	tZq	MADGRAPH	NLO	NLO
$Z(\rightarrow 2\ell)\gamma$		MADGRAPH	NLO	NLO
$W(\rightarrow \ell\nu)\gamma$	$p_T(\gamma) > 40 \text{ GeV}$	MADGRAPH	LO	LO
	$p_T(\gamma) > 130 \text{ GeV}$	MADGRAPH	NLO	NLO
ZZ	$ZZ \rightarrow 4\ell$	MADGRAPH	NLO	NLO
	$ZZ \rightarrow 2\ell 2q$	MADGRAPH	NLO	NLO
	$ZZ \rightarrow 2\ell 2\nu$	POWHEG	NLO	NLO
WW	$WW \rightarrow \ell\nu qq$	POWHEG	NLO	NNLO
	$WW \rightarrow 4q$	MADGRAPH	NLO	NLO
	$WW \rightarrow 2\ell 2\nu$	POWHEG	NLO	NNLO
WZ	$WZ \rightarrow \ell\nu 2q$	POWHEG	NLO	NLO
	$WZ \rightarrow 3\ell\nu$	MADGRAPH	NLO	NLO
	$WZ \rightarrow 2\ell 2q$	MADGRAPH	NLO	NLO
	$WZ \rightarrow 1\ell 3\nu$	MADGRAPH	NLO	NLO
	$WZ \rightarrow 1\ell 1\nu 2q$	MADGRAPH	NLO	NLO
$\gamma\gamma$	$M_{\gamma\gamma} > 40 \text{ GeV}$	SHERPA	LO	LO
	$M_{\gamma\gamma} > 80 \text{ GeV}$	MADGRAPH	NLO	NLO
	$M_{\gamma\gamma} > 200 \text{ GeV}, p_T^\gamma > 70 \text{ GeV}$	SHERPA	LO	LO
QCD multijet		MADGRAPH	LO	LO
Triboson	ZZZ	MADGRAPH	NLO	NLO
	$W\gamma\gamma$	MADGRAPH	NLO	NLO
	WZZ	MADGRAPH	NLO	NLO
	$WZ\gamma$	MADGRAPH	NLO	NLO
	WWW	MADGRAPH	NLO	NLO
	WWZ	MADGRAPH	NLO	NLO
	$WW\gamma$	MADGRAPH	NLO	NLO
Higgs boson	$ggH \rightarrow b\bar{b}, \gamma\gamma$	MADGRAPH	NLO	N3LO
	$ggH \rightarrow \tau\bar{\tau}, ZZ(4\ell), WW(2\ell 2\nu), Z\gamma$	POWHEG	NLO	N3LO
	$VBF(H \rightarrow b\bar{b}, \tau\bar{\tau}, WW, ZZ, Z\gamma)$	POWHEG	NLO	NNLO
	$VBF(H \rightarrow \gamma\gamma)$	MADGRAPH	NLO	NNLO
	$VH(\text{not } H \rightarrow b\bar{b})$	MADGRAPH	NLO	NNLO
	$VH(H \rightarrow b\bar{b})$	POWHEG	NLO	NNLO
	$t\bar{t}H$	POWHEG	NLO	NLO