

Benchmark points for $ggF \rightarrow H_3 \rightarrow (H_{SM} \rightarrow bb \text{ or } \tau\tau) + (H_{\text{singlet}} \rightarrow bb)$

These benchmark points (updated 10/2/2022, modified values for $M_{H_3}=900$ GeV) correspond to maximally possible cross sections for the above process in the NMSSM respecting constraints as implemented in NMSSMTools:

- Mass and couplings (in the kappa framework) of the SM-like Higgs scalar; the mass allows for +/- 2 GeV theoretical uncertainty
- BSM searches at the LHC, and constraints from LEP
- B-physics
- Dark matter direct detection experiments (the relic density is typically too small, allowing for additional contributions from hidden sectors)

A summary of benchmark points is visualized in the figure below the table. SLHA files corresponding to the benchmark points are contained in the attached tar-zipped directory dirbbbb.tgz.

MH3	MS	Xbbbb(pb)	Xbbtau(pb)
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900	62	0.409E-02	0.436E-03
900	80	0.408E-02	0.434E-03
900	100	0.405E-02	0.431E-03
900	120	0.412E-02	0.438E-03
900	130	0.415E-02	0.441E-03
900	150	0.412E-02	0.447E-03
900	200	0.430E-02	0.458E-03
900	300	0.340E-02	0.361E-03
900	400	0.593E-03	0.630E-04
900	500	0.330E-03	0.351E-04
900	600	0.179E-03	0.190E-04

1000	62	0.191E-02	0.203E-03
1000	80	0.191E-02	0.203E-03
1000	100	0.189E-02	0.201E-03
1000	120	0.193E-02	0.205E-03
1000	130	0.201E-02	0.214E-03
1000	150	0.206E-02	0.219E-03
1000	200	0.217E-02	0.231E-03
1000	300	0.134E-02	0.143E-03
1000	400	0.341E-03	0.362E-04
1000	500	0.171E-03	0.182E-04
1000	600	0.131E-03	0.139E-04

1200	62	0.516E-03	0.550E-04
1200	80	0.513E-03	0.546E-04
1200	100	0.504E-03	0.536E-04
1200	150	0.492E-03	0.527E-04
1200	200	0.547E-03	0.582E-04
1200	300	0.447E-03	0.475E-04
1200	400	0.110E-03	0.117E-04
1200	500	0.564E-04	0.600E-05
1200	600	0.422E-04	0.449E-05

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1400	62	0.161E-03	0.171E-04
1400	80	0.168E-03	0.179E-04
1400	100	0.154E-03	0.165E-04
1400	120	0.153E-03	0.163E-04
1400	130	0.152E-03	0.163E-04
1400	150	0.156E-03	0.166E-04
1400	200	0.140E-03	0.149E-04
1400	300	0.129E-03	0.137E-04
1400	400	0.410E-04	0.436E-05
1400	500	0.214E-04	0.228E-05
1400	600	0.161E-04	0.171E-05

1600	62	0.480E-04	0.512E-05
1600	80	0.473E-04	0.504E-05
1600	100	0.439E-04	0.467E-05
1600	150	0.432E-04	0.459E-05
1600	200	0.448E-04	0.477E-05
1600	300	0.312E-04	0.331E-05
1600	400	0.128E-04	0.136E-05
1600	500	0.639E-05	0.679E-06
1600	600	0.469E-05	0.499E-06

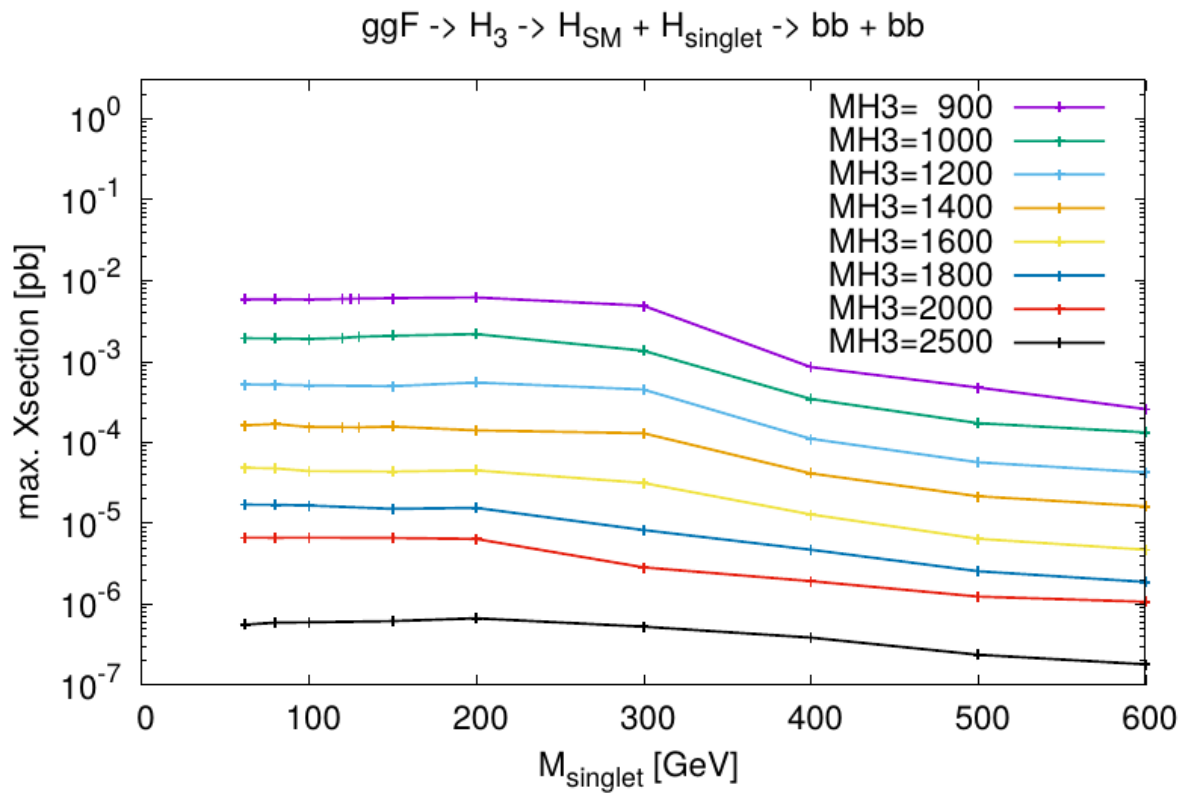
1800	62	0.169E-04	0.180E-05
1800	80	0.168E-04	0.179E-05
1800	100	0.165E-04	0.176E-05
1800	150	0.150E-04	0.160E-05
1800	200	0.154E-04	0.164E-05
1800	300	0.820E-05	0.872E-06
1800	400	0.469E-05	0.498E-06
1800	500	0.254E-05	0.270E-06
1800	600	0.187E-05	0.199E-06

2000	62	0.661E-05	0.703E-06
2000	80	0.659E-05	0.700E-06
2000	100	0.662E-05	0.704E-06
2000	150	0.653E-05	0.695E-06
2000	200	0.637E-05	0.678E-06
2000	300	0.283E-05	0.301E-06
2000	400	0.191E-05	0.203E-06
2000	500	0.123E-05	0.130E-06
2000	600	0.106E-05	0.113E-06

2500	62	0.555E-06	0.591E-07
2500	80	0.587E-06	0.625E-07
2500	100	0.594E-06	0.632E-07
2500	150	0.613E-06	0.653E-07
2500	200	0.664E-06	0.707E-07
2500	300	0.524E-06	0.558E-07
2500	400	0.384E-06	0.408E-07
2500	500	0.235E-06	0.250E-07

2500	600	0.179E-06	0.190E-07
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3000	150	0.404E-07	0.430E-08
3000	200	0.238E-07	0.254E-08



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