- factorization in high-energy limit: $[M_{Tb} = \sqrt{p_{Tb}^2 + m_b^2}]$

$$\frac{d\sigma^{(2\to 3)}}{dM_{Tb}^2} = \frac{1}{M_{Tb}^2}\left\{\frac{\alpha_s}{2\pi}P_{qg}\otimes g\otimes g\otimes\hat{\sigma}_{\bar{b}g}\right\}_{M_{Tb}=m_b\to 0} + \cdots$$

[leading log!]

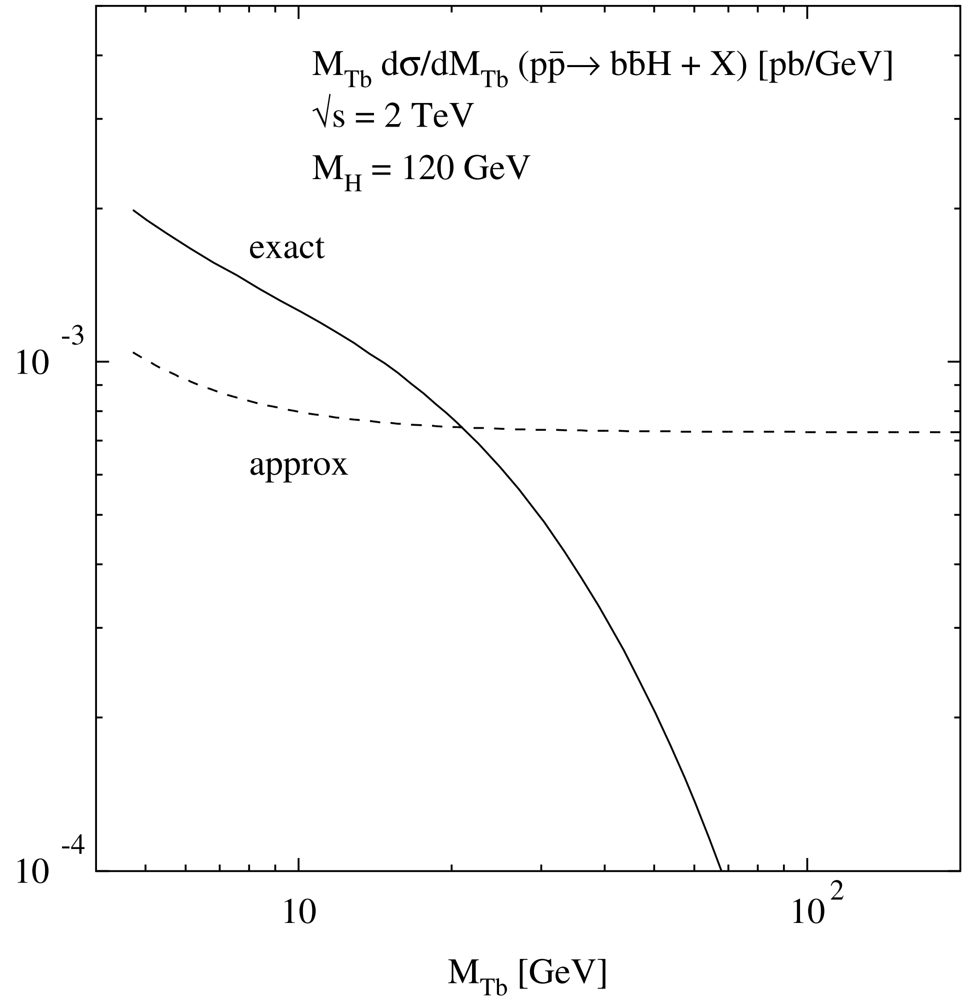
- improvement:

$$P_{qg}(x) \to P_{qg}(x) + \frac{m_b^2}{M_{Tb}^2}x(1-x)$$

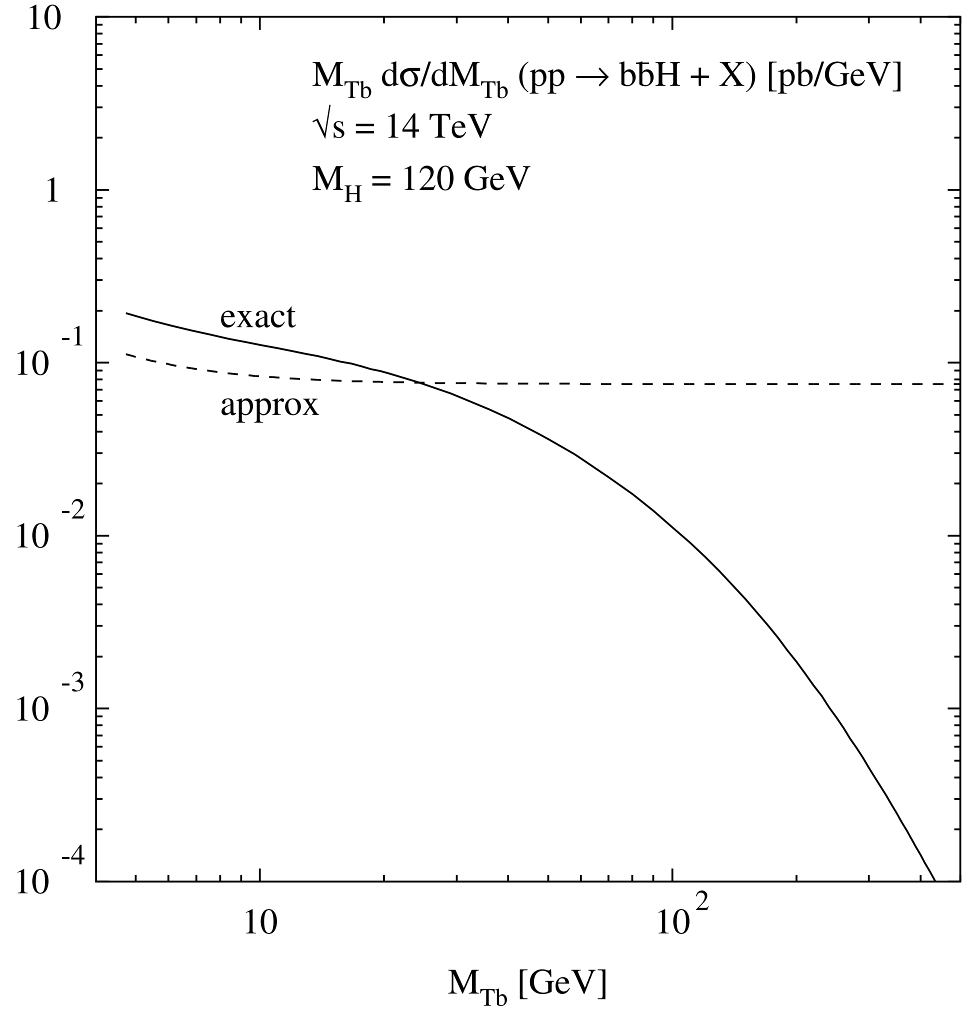
- scaling function:

$$\hat{\sigma}_{gg} = \frac{\alpha_s^2}{(M_H + 2m_b)^2}\, f_{gg}(\eta)$$

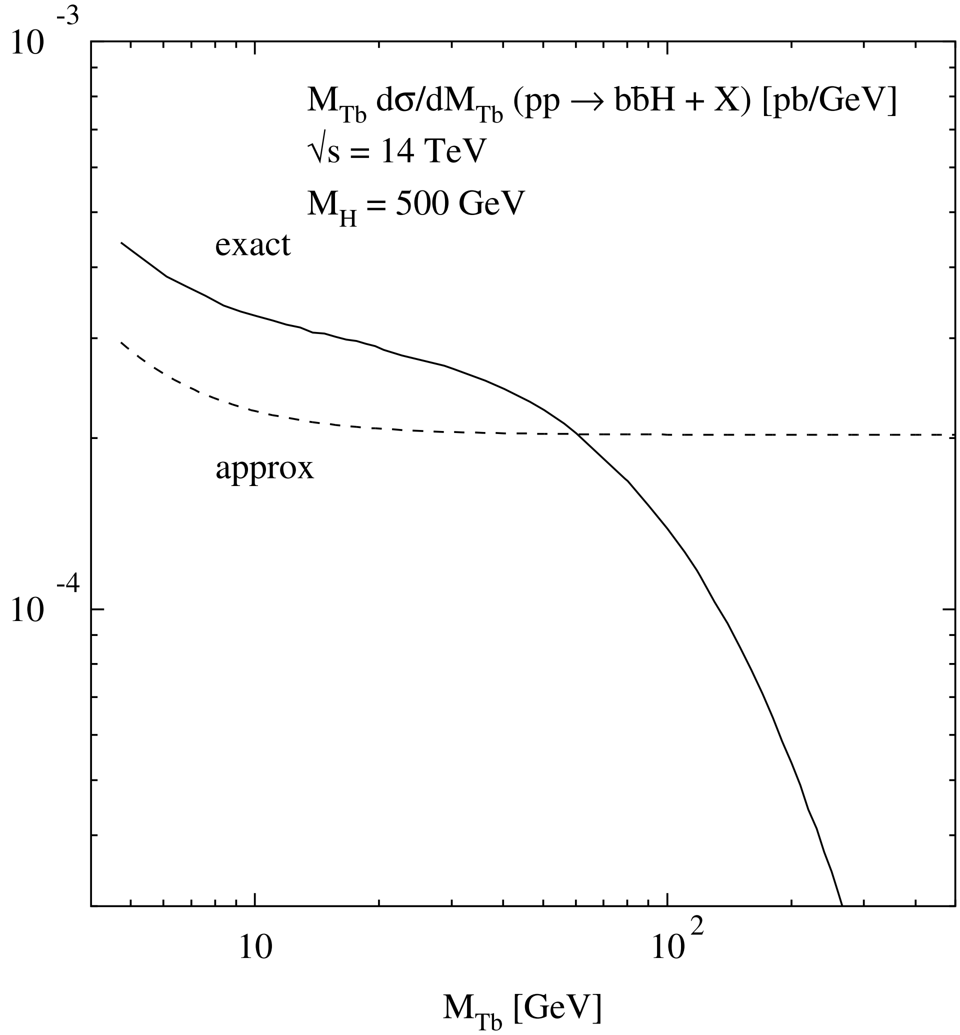
$$\eta = \frac{\hat{s}}{(M_H + 2m_b)^2} - 1$$

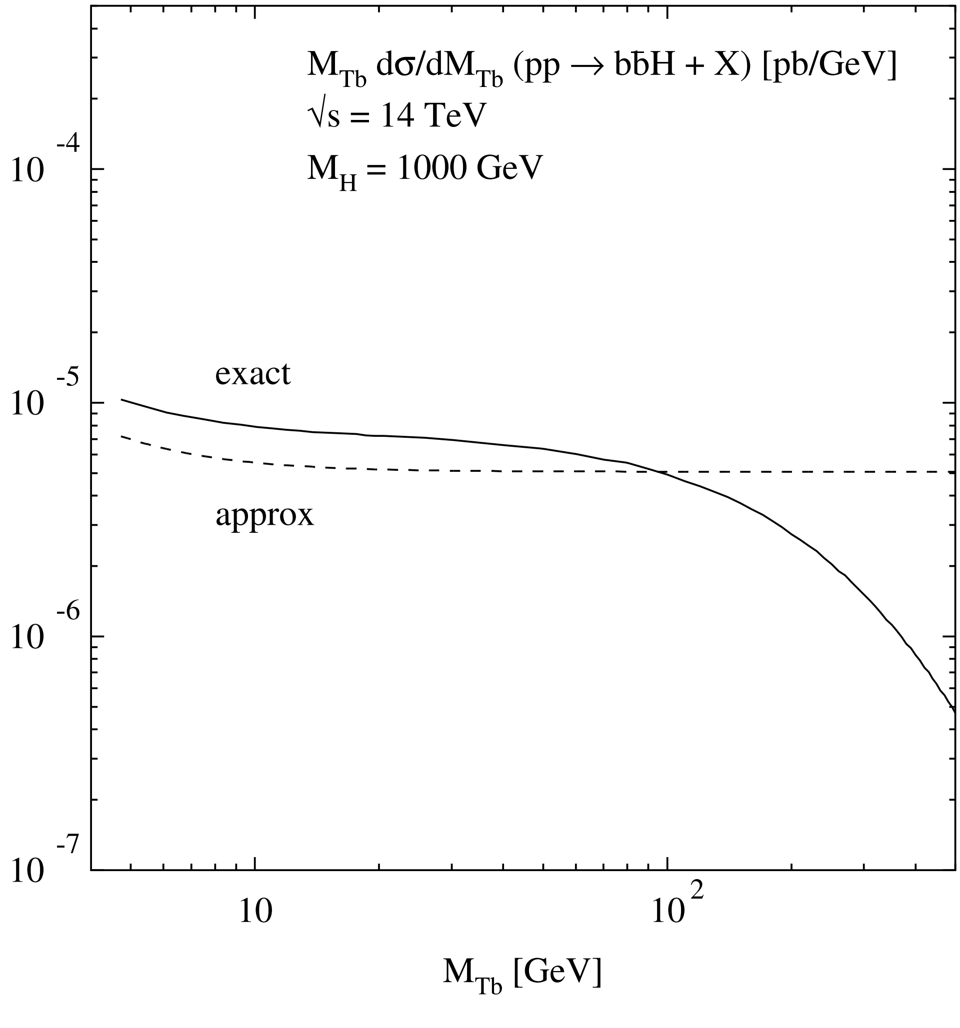


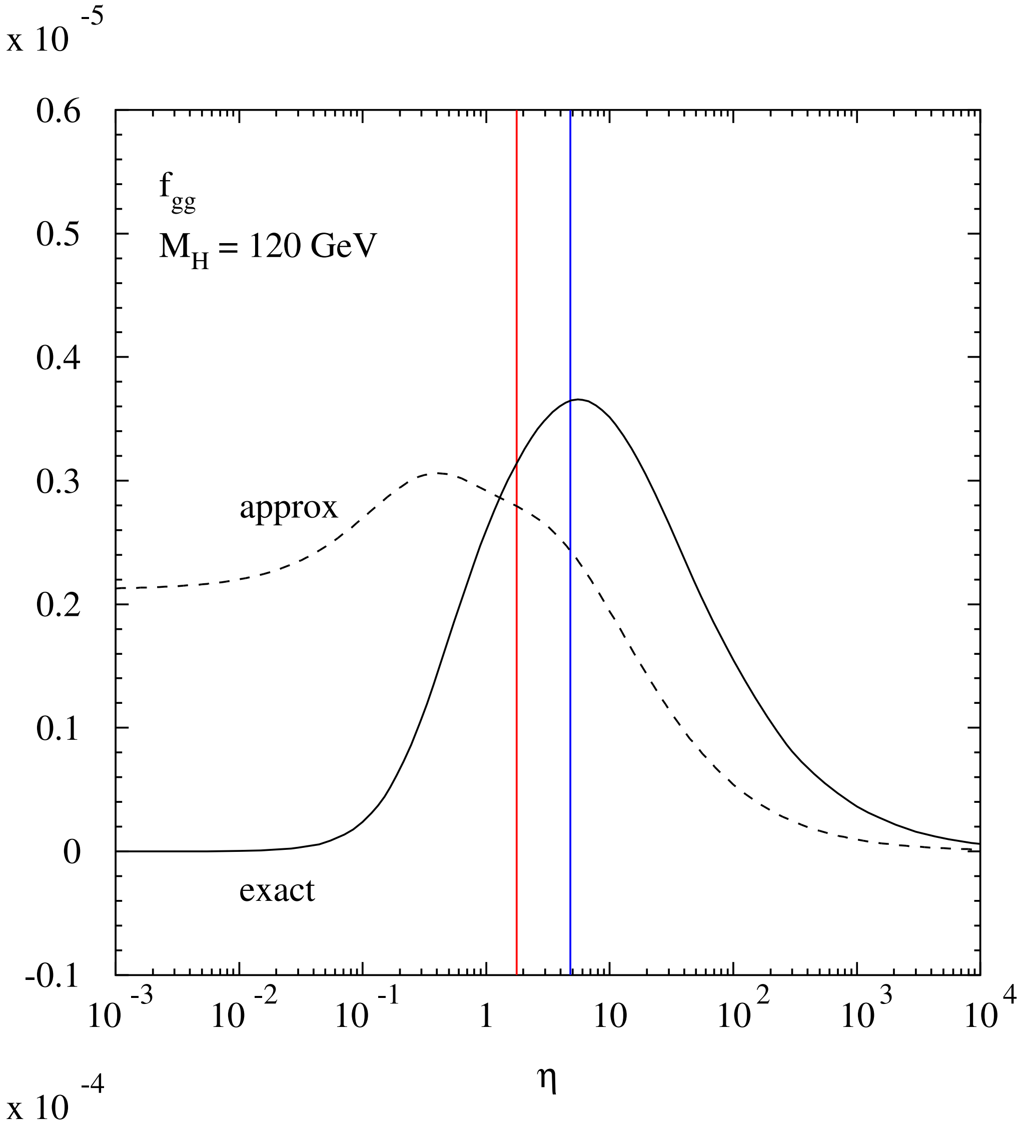
$M_{Tb}\, d\sigma/dM_{Tb}$ ($p\bar{p} \rightarrow b\bar{b}H + X$) [pb/GeV]
$\sqrt{s}$ = 2 TeV
M_H = 120 GeV
exact
approx
10^{-3}
10^{-4}
10
10^2
M_{Tb} [GeV]

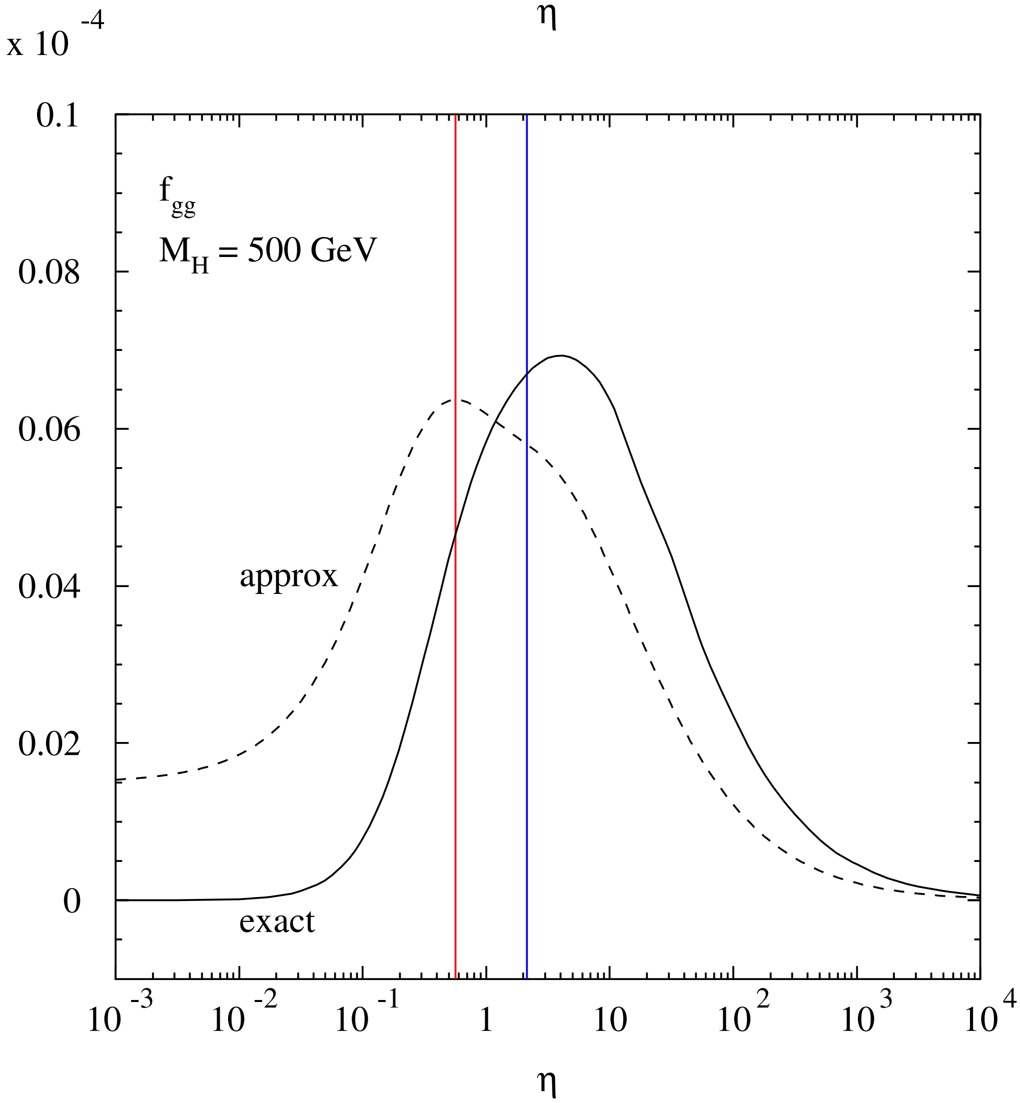


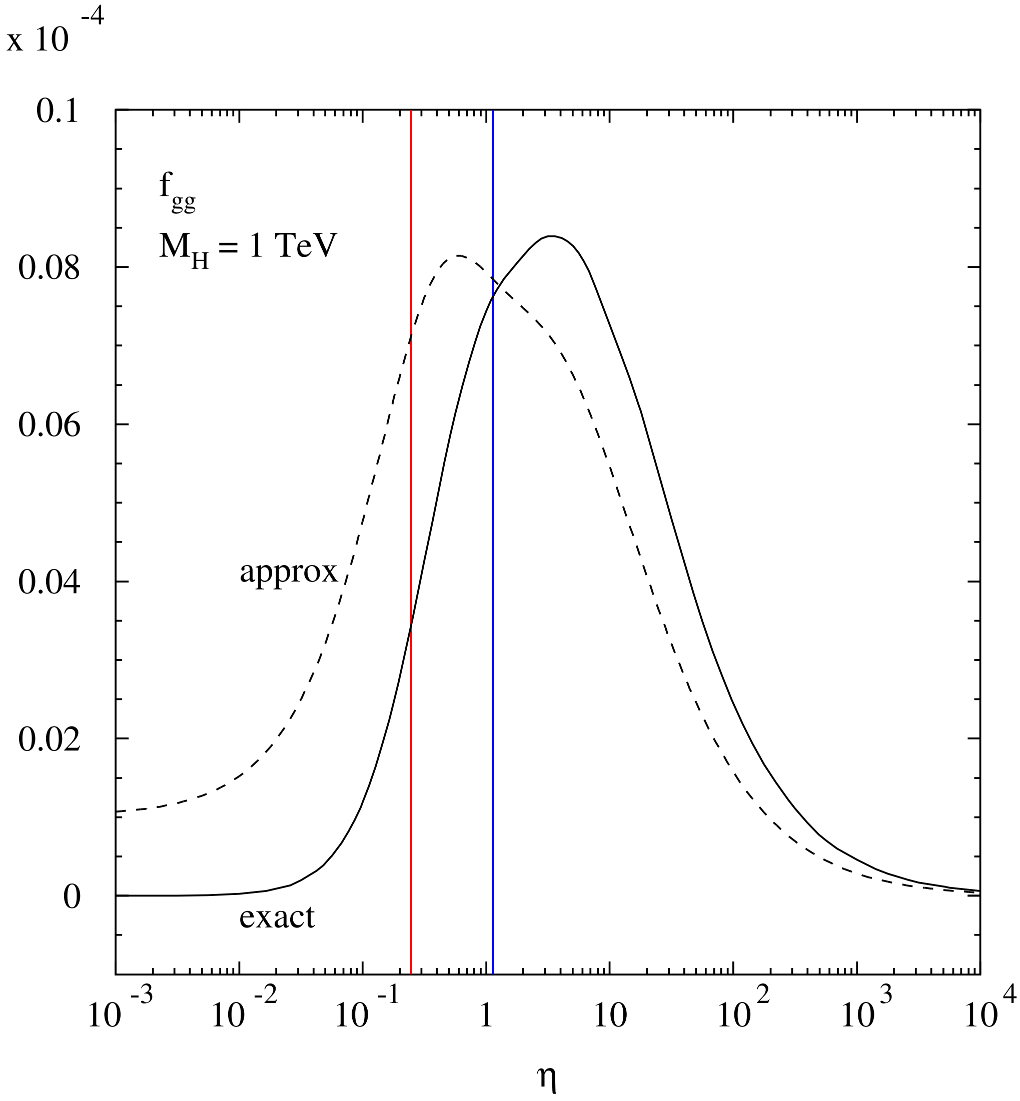
$M_{Tb}\, d\sigma/dM_{Tb}$ ($pp \rightarrow b\bar{b}H + X$) [pb/GeV]
$\sqrt{s}$ = 14 TeV
M_H = 120 GeV
exact
approx
10
1
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10
10^2
M_{Tb} [GeV]


$M_{Tb}\, d\sigma/dM_{Tb}$ (pp $\rightarrow b\bar{b}H + X$) [pb/GeV]
$\sqrt{s}$ = 14 TeV
M_H = 500 GeV
exact
approx
10^{-3}
10^{-4}
10
10^2
M_{Tb} [GeV]


$M_{Tb}\, d\sigma/dM_{Tb}$ (pp $\rightarrow b\bar{b}H + X$) [pb/GeV]
$\sqrt{s}$ = 14 TeV
M_H = 1000 GeV
exact
approx
10^{-4}
10^{-5}
10^{-6}
10^{-7}
10
10^2
M_{Tb} [GeV]


x 10 -5
f gg
M H = 120 GeV
approx
exact
η


x 10 -4
f gg
M H = 500 GeV
approx
exact
η



x 10 -4
0.1
0.08
0.06
0.04
0.02
0
f_gg
M_H = 1 TeV
approx
exact
10 -3
10 -2
10 -1
1
10
10 2
10 3
10 4
η