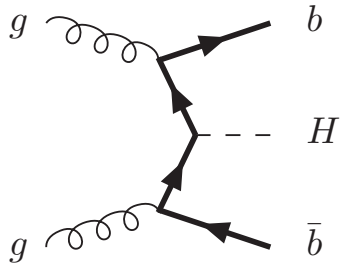
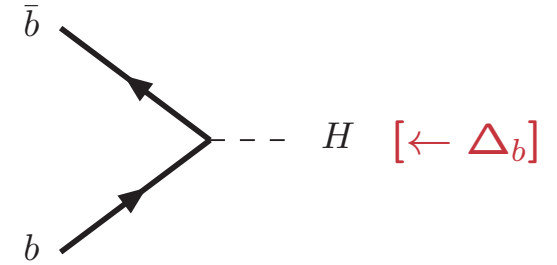


$b\bar{b}$ +Higgs production



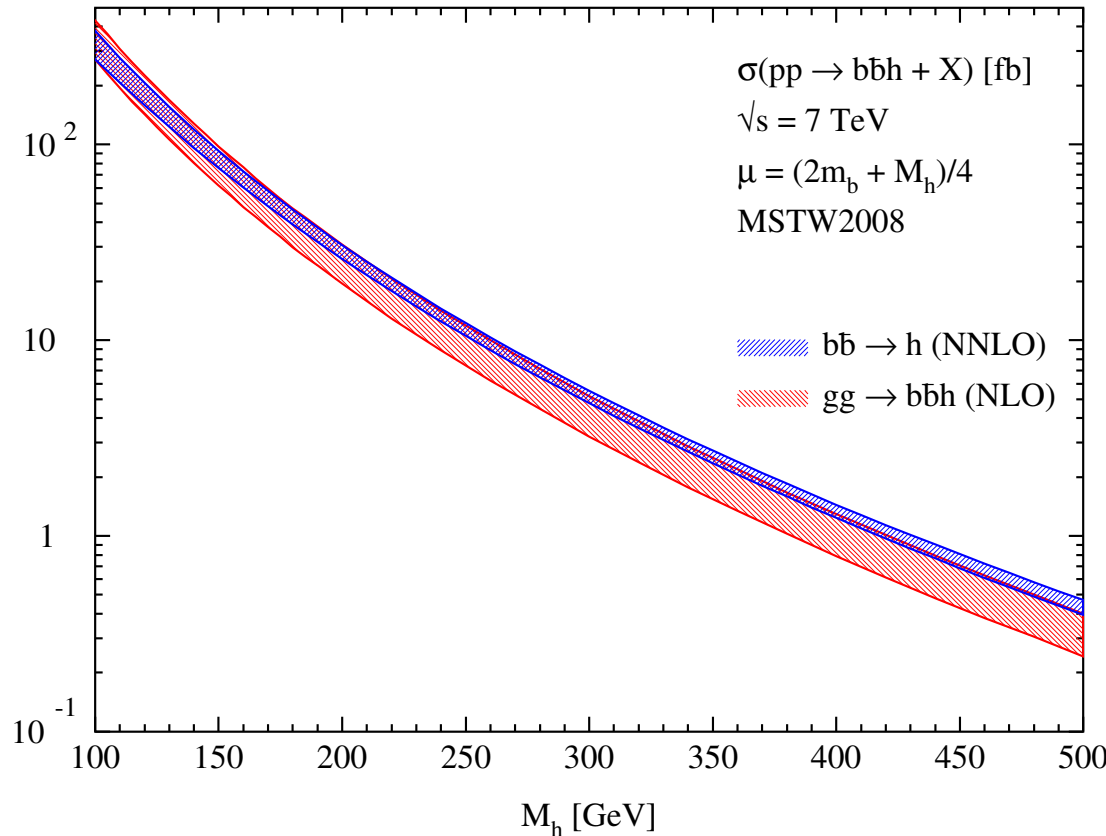
NLO

exact $g \rightarrow b\bar{b}$ splitting & mass/off-shell effects
no resummation of $\log M_H^2/m_b^2$ terms



NNLO

massless/on-shell b 's, no p_{Tb}
resummation of $\log M_H^2/m_b^2$ terms



Santander matching:

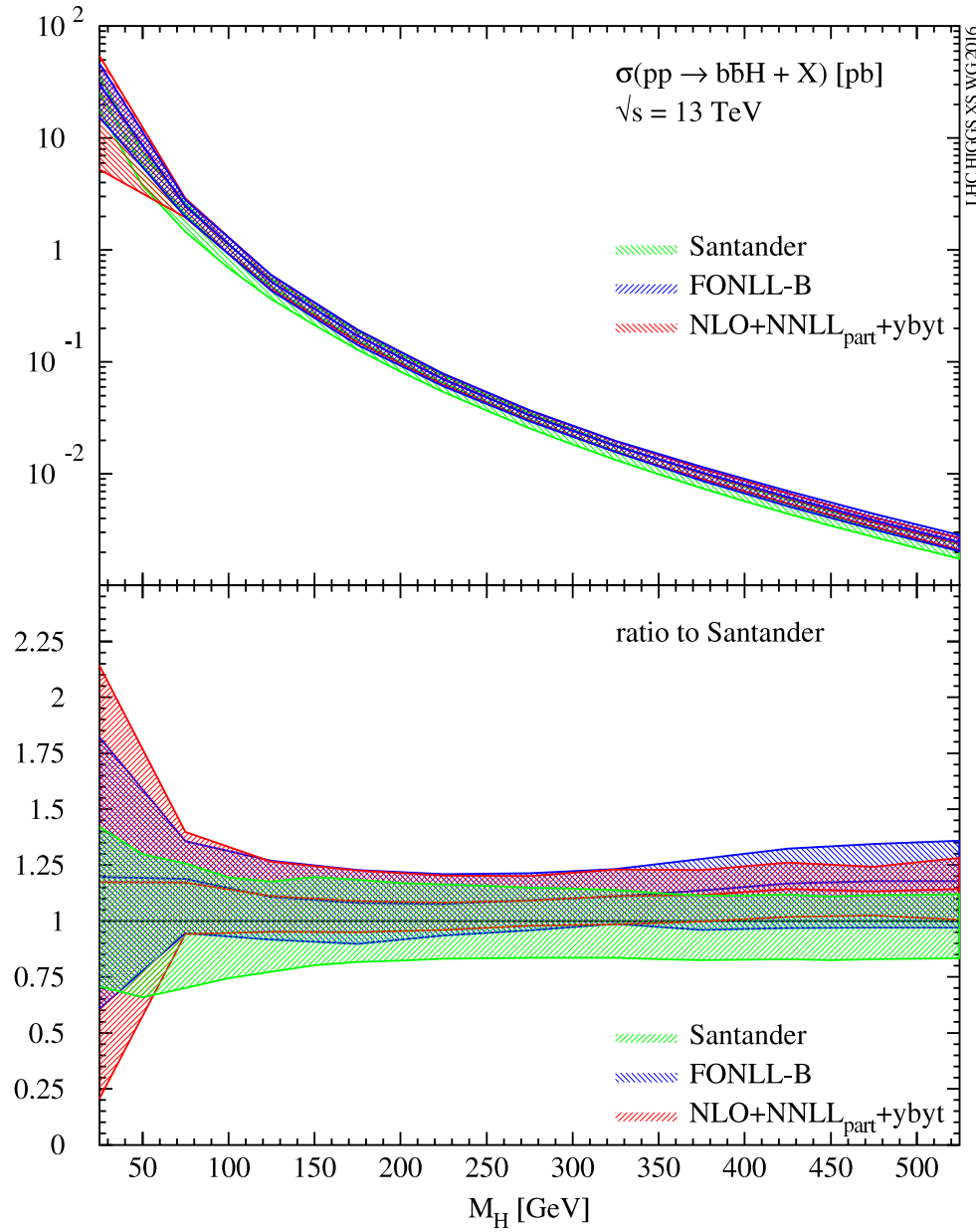
$$\sigma = \frac{\sigma^{4FS} + w\sigma^{5FS}}{1 + w}$$

$$w = \log \frac{M_H}{m_b} - 2$$

Harlander, Krämer, Schumacher

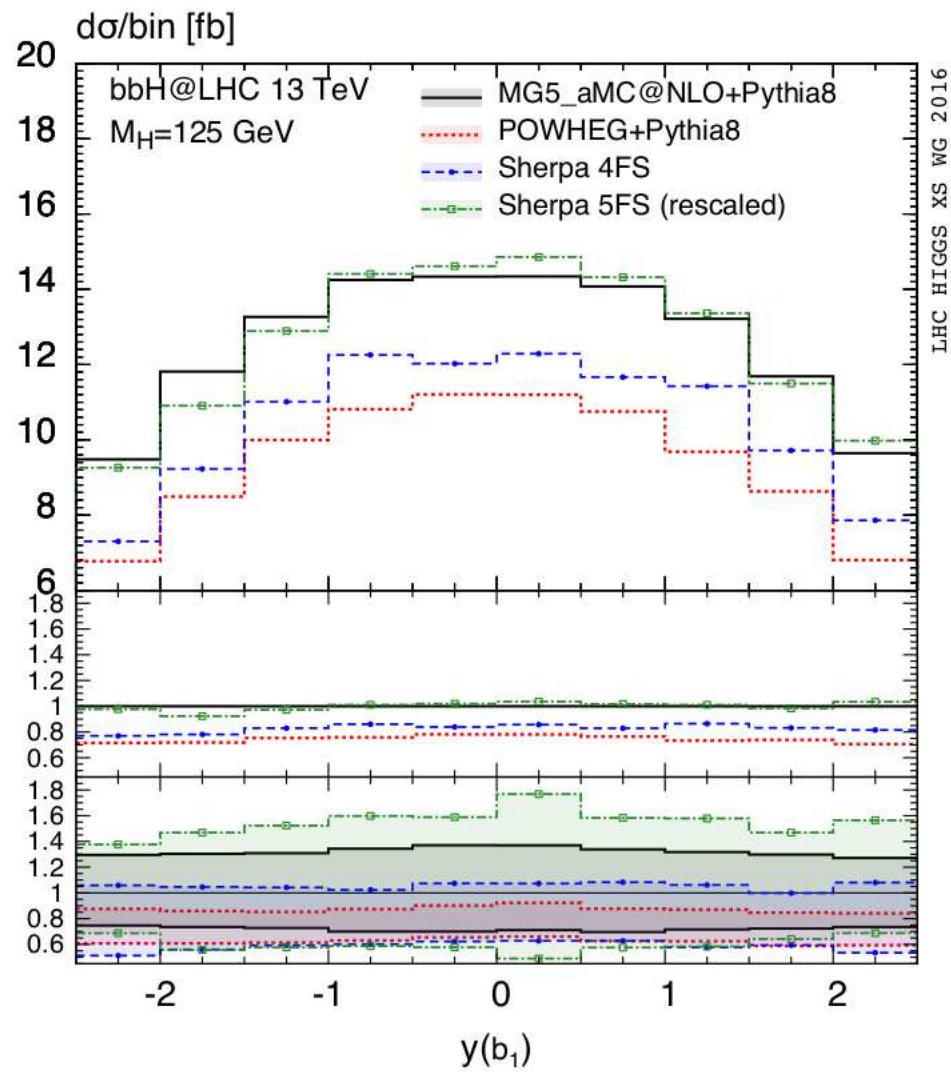
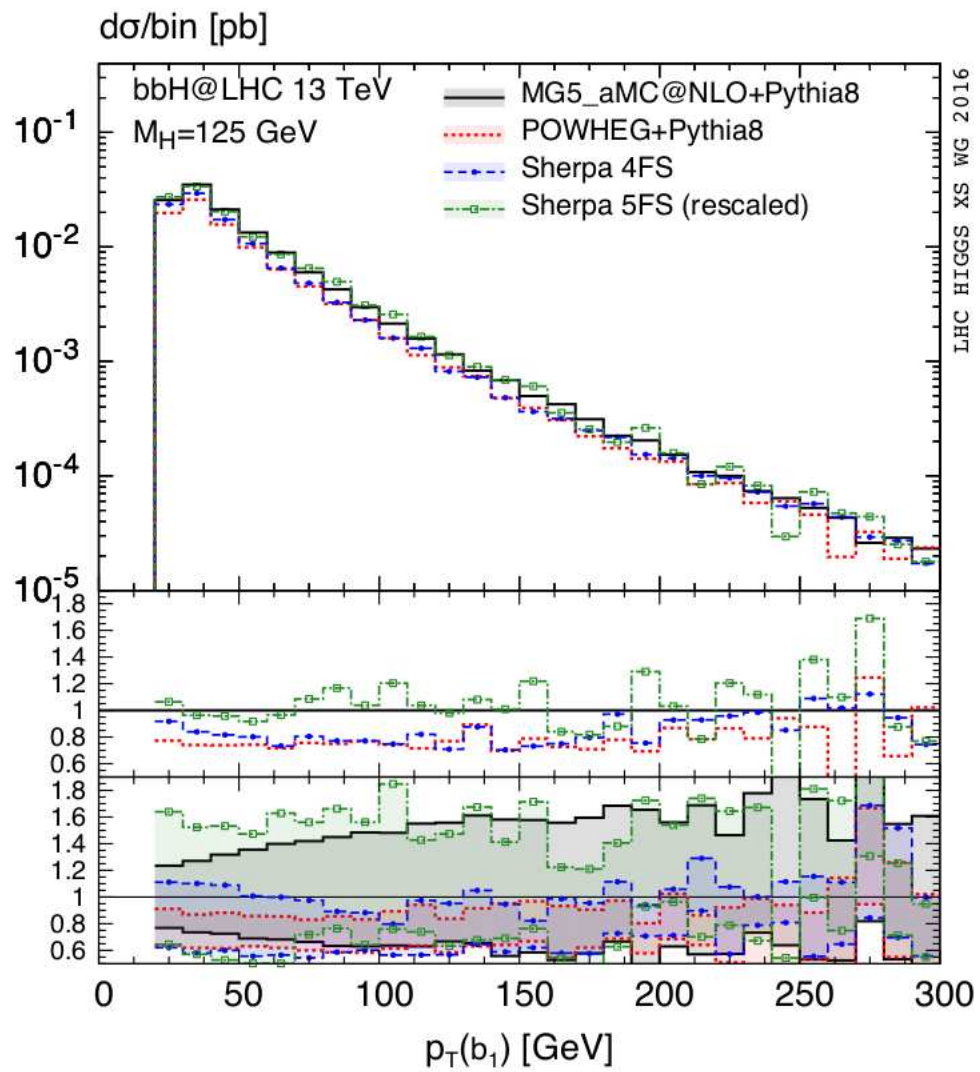
Dittmaier, Krämer, S. Dawson, Jackson, Reina, Wackerath
Harlander, Kilgore

matching

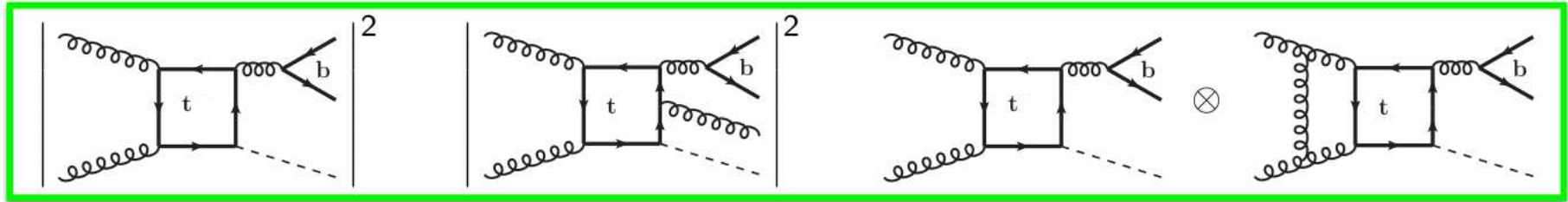


Bonvini, Papanastasiou, Tackmann

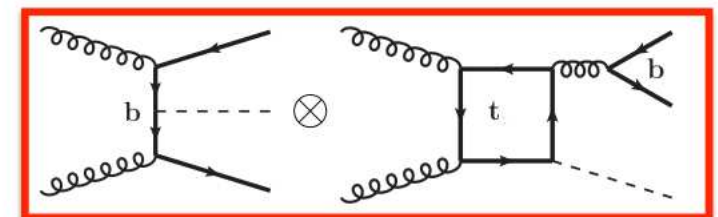
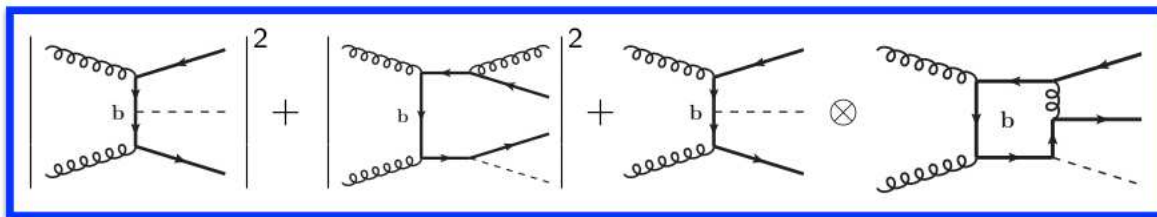
Forte, Napoletano, Ubiali



$$gg \rightarrow Hg^* \rightarrow Hb\bar{b}$$



$$d\sigma = y_b^2 \alpha_s^2 \left(\Delta_{y_b^2}^{(0)} + \alpha_s \Delta_{y_b^2}^{(1)} \right) + y_t y_b \alpha_s^3 \left(\Delta_{y_b y_t}^{(0)} + \alpha_s \Delta_{y_b y_t}^{(1)} \right) + y_t^2 \alpha_s^4 \left(\Delta_{y_t^2}^{(0)} + \alpha_s \Delta_{y_t^2}^{(1)} \right)$$



Carminati, Manzoni, Mazzeo, Turra, Wiesemann, Zaro

background for $gg \rightarrow HH \rightarrow b\bar{b}\gamma\gamma$