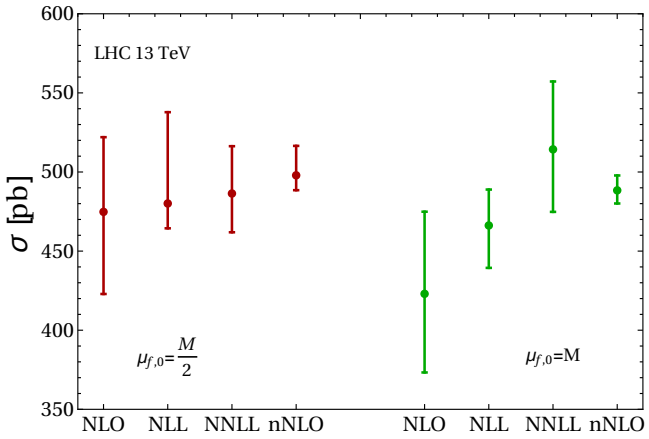

Figure 2. Comparison between different perturbative approximations to the total cross section carried out with the default factorization scale choices $\mu_{f,0} = M/2$ (left) and $\mu_{f,0} = M$ (right). The labels "NLL" and "NNLL" on the horizontal axis indicate NLO+NLL and NLO+NNLL calculations.

combine the envelope of results from the two choices into a single, larger perturbative uncertainty. The NLO+NNLL results quoted at either scale would not change significantly through such a combination.

3.3 Differential distributions

In this section we discuss results for differential distributions. In particular, we consider:

- the distribution differential with respect to the invariant mass of the top pair and Higgs boson in the final state, M;
- the distribution differential with respect to the invariant mass of the top-quark pair, $M_{t\bar{t}}$;
- the distribution differential with respect to the transverse momentum of the Higgs boson, p_T^H;
- the distribution differential with respect to the transverse momentum of the top quark, p_T^t.

We first set the default value of the factorization scale to $\mu_{f,0} = M/2$. Figure 3 shows the comparison between complete NLO calculations and approximate NLO calculations for all of the distributions listed above. We observe that for all of the distributions the approximate NLO scale uncertainty band (in blue) is included in the NLO