

Higgs Γ from off-shell $H \rightarrow ZZ$: signal/background interference K-factor

BACKGROUND ONLY KNOWN AT LO

- NLO is already 2-loop, with 3rd generation running in the loop
- Unless some breakthrough, not to be expected soon

CAN ESTIMATE CORRECTIONS USING SOFT GLUON APPROXIMATION

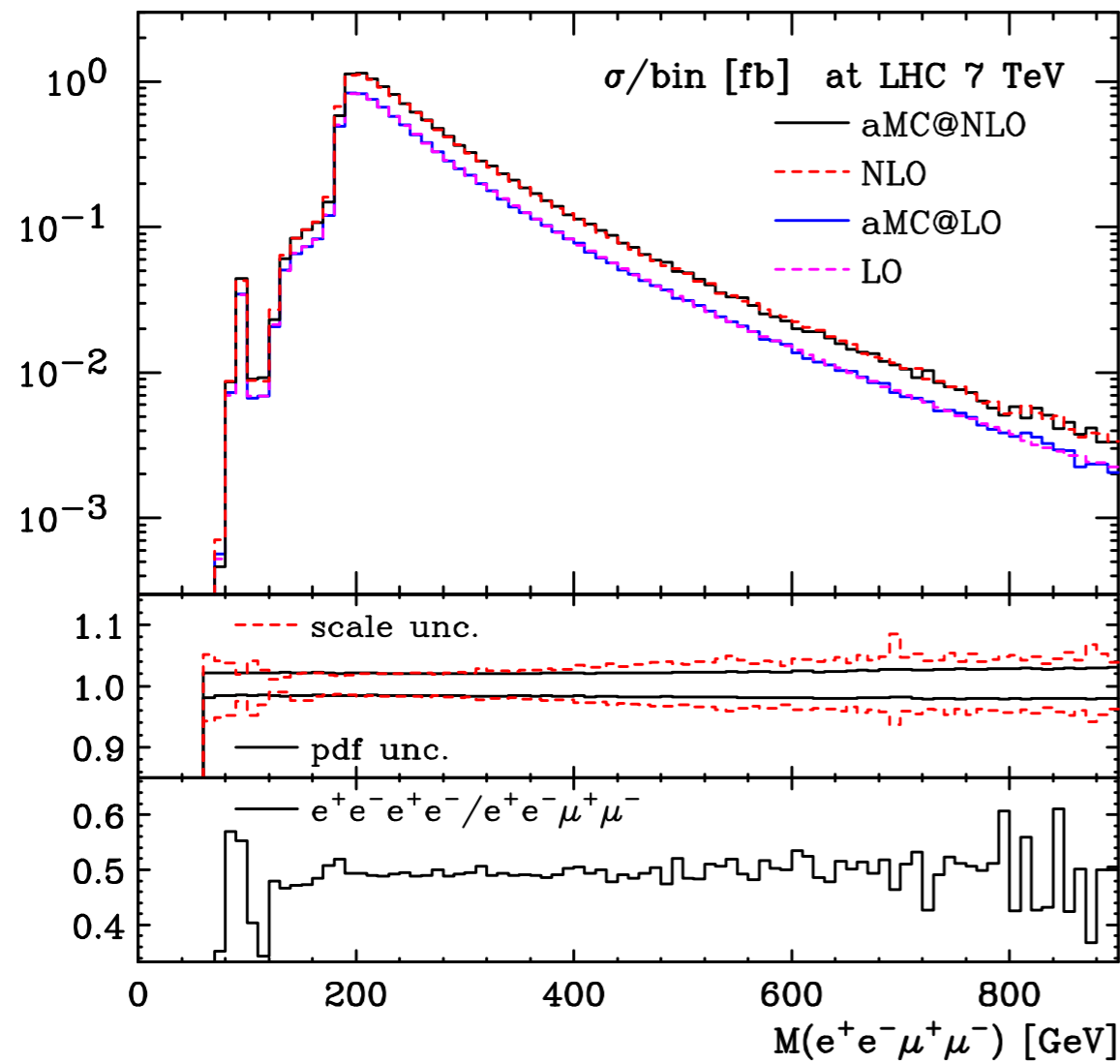
- Approximation should work well in the high invariant mass region
- Studied in the $gg \rightarrow WW$ case [Bonvini, et al PRD88 (2013)]
- Result depends on color flow \rightarrow same result for ZZ

Signal/background interference K-factors: estimates from soft approximation

- Uncertainty on the approximation estimated at the $O(10\%)$ level (at high invariant mass)
- SAME K-FACTOR OF THE (GLUON-INDUCED) SIGNAL

AVOIDING THIS ISSUE IN THE ANALYSIS:
Present exclusion limits as a function of
the (unknown) K-factor

$qq \rightarrow WW$ k-factors



[Frederix et al, JHEP 1202 (2012)]

- Corrections to m_{4l} are to good accuracy a global K-factor [Frederix et al, JHEP 1202 (2012)]
- Look for instance at [Melia et al, JHEP 1111 (2011)]