

# Simulating $t\bar{t} + X$

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# Inclusive production of $t\bar{t} + X$ @ LHC

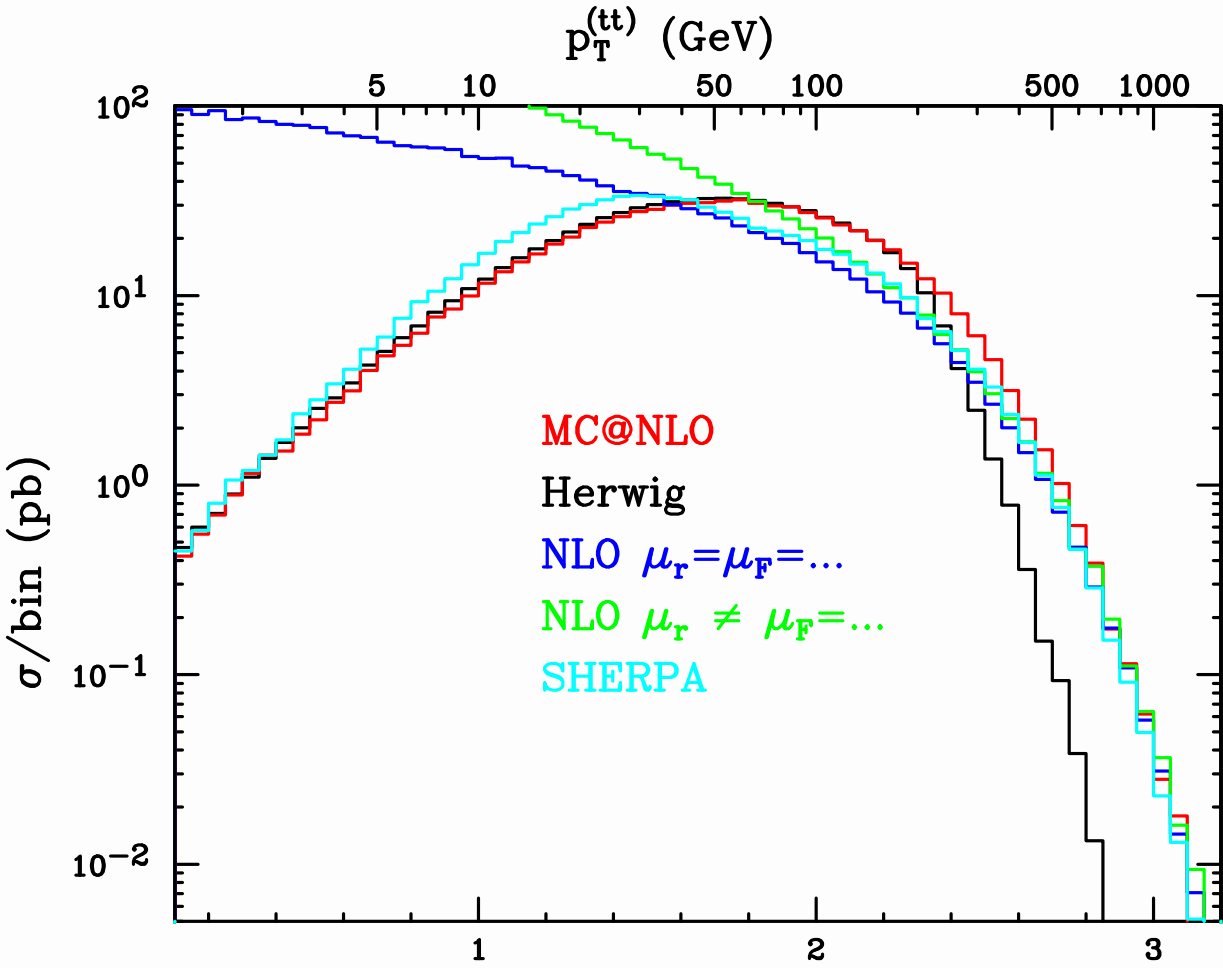
**Use state of the art generators to study inclusive  $t\bar{t} + X$  production**

**The players:**

- Fixed order calculation @ NLO in  $\alpha_S$  (as delivered by MCFM)
- The HERWIG Monte Carlo using the LO  $2 \rightarrow 2$  matrix element
- MC@NLO with the full NLO matrix element merged with the Herwig shower
- SHERPA using the CKKW formalism to merge the tree level  $2 \rightarrow 2$  and  $2 \rightarrow 3$  matrix elements with the parton shower

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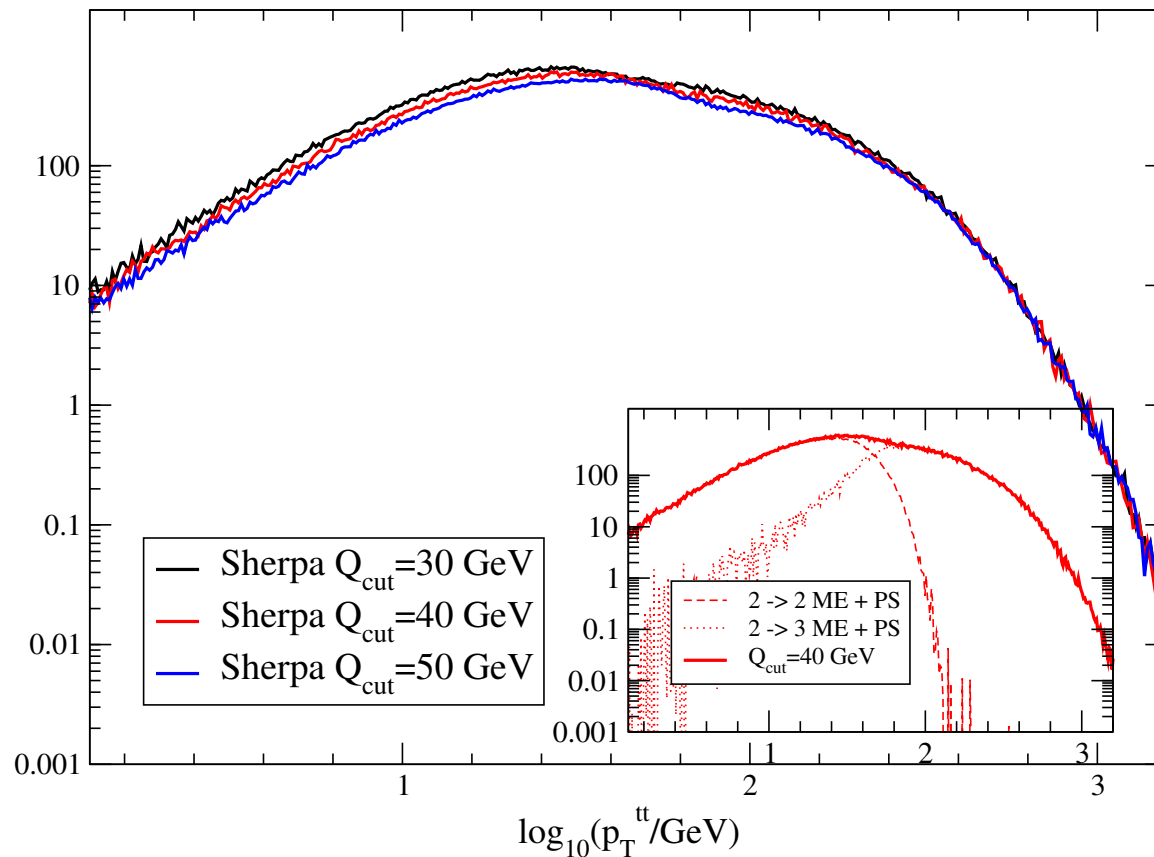
## The $p_{\perp}$ distribution of the $t\bar{t}$ pair



➔ HERWIG and SHERPA have been normalized to the NLO Xsec

# Inclusive production of $t\bar{t} + X$ @ LHC

## SHERPA systematics: impact of changing the matching scale $Q_{cut}$



➔ Xsec changes by  $\approx 25\%$ , shape is rather stable

# Inclusive production of WH @ Tevatron

## The $p_{\perp}$ of the WH system in inclusive production @ the Tevatron

