

# ATLAS/CMS/LPCC MC generators & future challenges

Discussion on tuning in the  
presence of matching

ATLAS/CMS/LPCC MC workshop, 2012-11-21

# Tuning in merged/matched generators

- ▶ **PDFs in ME and shower – a devil's alternative:**
  - NLO ME requires an NLO PDF
    - ⇒ shower should use same PDF to avoid mismatch
  - But NLO PDFs aren't really suitable for IR end of the shower, nor MPI scattering...
  - Which ideal has to give way?
  - Mismatch ME/PS PDF  $f(x, Q^2)$  values while ensuring  $\alpha_s$  compatibility?

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  - Do we really need different MPI tunes for (different) matching applications?
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  - Are  $\mu_R$  and  $\mu_F$  variations enough?
  - How big? Correlated or independent?  $\times / \div 2$  or match data errors?
  - Merging scale & separate  $\mu_R$ ?
  - Practicalities: in-run reweighting  $\Rightarrow$  use of weight vectors ✓  
Some tech infrastructure needed.

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- ▶ **Colour reconnection in hard-scale HF:  $b$  phys,  $t\bar{t}$  colour flow**