

Precision SM Shapes

Assessing the state of the art for Z & h spectra at hadron colliders

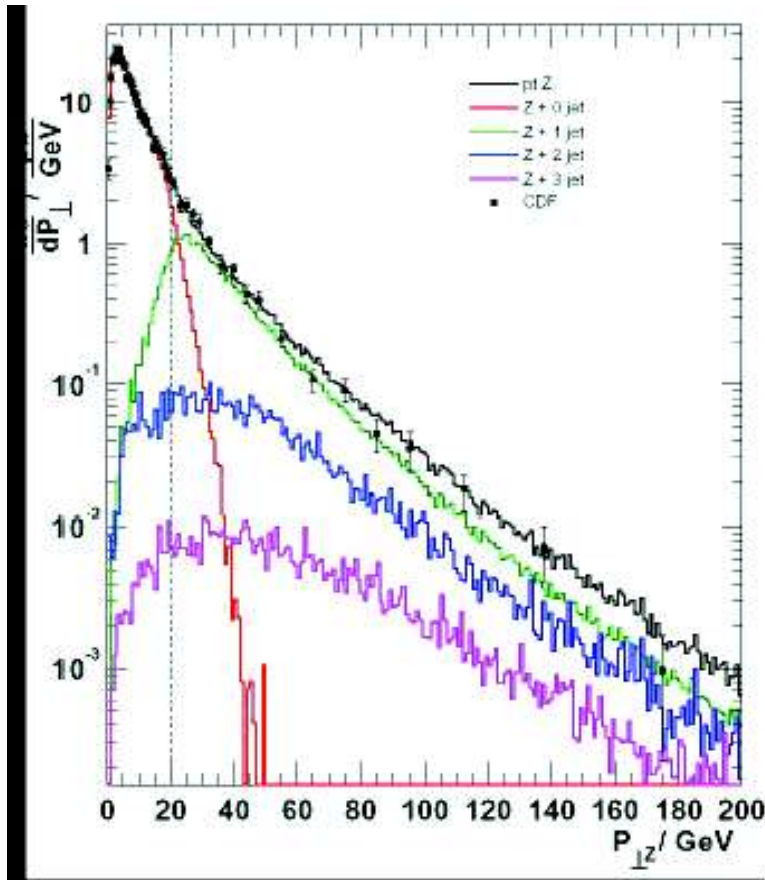
Gieseke, Melnikov, Mrenna, Nadolsky, Skands, Moretti,
Magnea, Balazs, Ferrag, Bartalini, Zametti, Kauer, Krasny

- NNLO fully diff results available for h, NLO for Z+jet. NN(N?)LL also available.
- But tools are either:
 - LO + (real) NLO + parton showers ([Herwig](#), [Pythia](#))
 - NLO + parton showers ([MC@NLO](#))
 - LO + (real) NNN...LO + parton showers ([Sherpa](#), [Patriot](#), [Ariadne](#))
- Need to assess tools: what to use where, how good are they?
- Shapes & K-factors
 - **Will Study Z & h + jets production, producing comprehensive comparisons**
 - **Need contacts from:**
 - [MC@NLO](#)
 - [Ariadne](#)
 - [Sherpa](#)

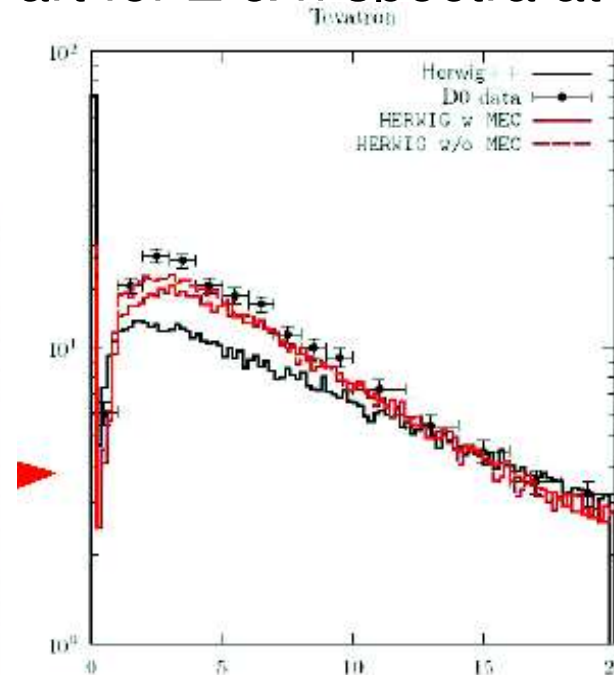
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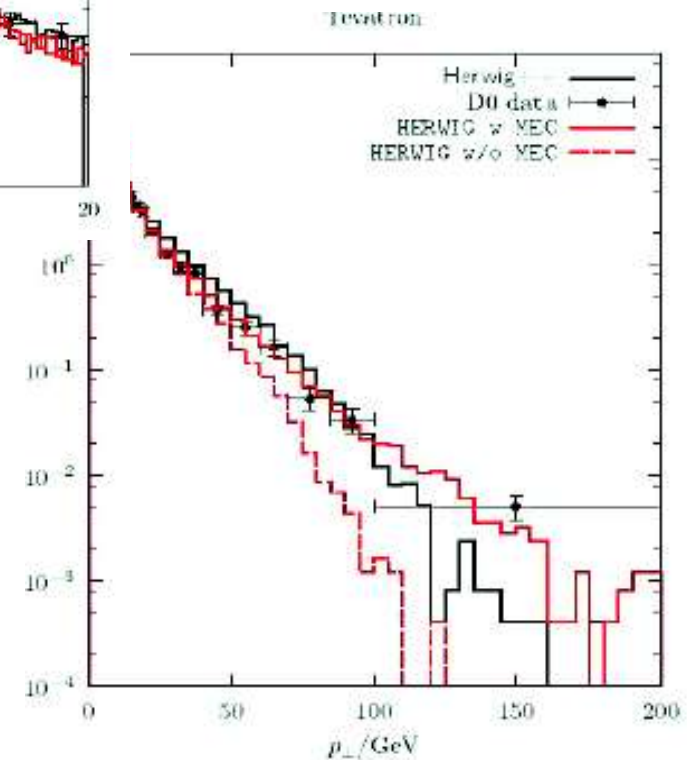
EXAMPLES



DY: Sherpa

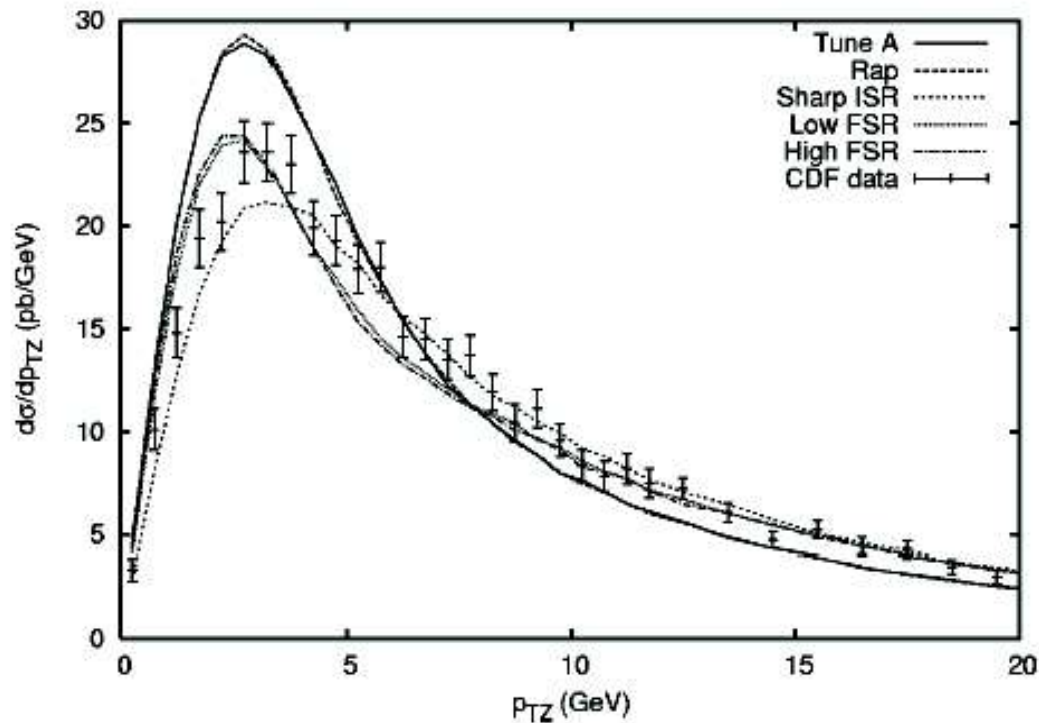


DY: Herwig,
Herwig++



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+ MC@NLO

+ Patriot

+ Resummation (Resbos)

+ NLO QCD Z+jet

+ same thing for Higgs

DY: Pythia 6.2 / 6.3

NB: $t\bar{t}$ also very interesting:
different spin/colour structure.

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People Interested

Gieseke (HERWIG/HERWIG++)

Melnikov (NNLO QCD)

Mrenna (PATRIOT, PYTHIA)

Nadolsky (RESBOS)

Skands (PYTHIA 6.2/6.3)

Moretti (HERWIG w/ Higgs + jet real correction)

Magnea

Balazs

Ferrag

Bartalini

Zametti

Kauer

Krasny