

Parton showers and MLM matching

with MadGraph and Pythia

Tutorial

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Lectures and exercises found at

<https://server06.fynu.ucl.ac.be/projects/madgraph/wiki/SchoolKias>

Exercises

Time to play around yourselves! Some suggestions:

1. Generate $p p \rightarrow w^+ w^-$ with 0 jets, 0, 1 jets and 0, 1, 2 jets
(Each on different computers - use the most powerful computer for 0, 1, 2 jets)
 - a. Generate 20,000 events for a couple of different x_{qcut} values.
 - b. Compare the distributions (before and after Pythia) and cross sections (before and after Pythia) between the different processes, and between the different x_{qcut} values.
 - c. Summarize: How many jets do we need to simulate? What is a good x_{qcut} value? How are the distributions affected?
2. Do the same exercise for matched squark production
($p p \rightarrow u \bar{u} + 0, 1$ jets)
 - a. Run with and without “\$ go” - how does the result change?
 - b. With “\$ go”, do the exercises a.-c. under 1. What is a good choice for matching scale?