



Herwig Tuning





What's currently done

Usually a three step tuning:

1. Light particles and hadronization (LEP).
2. Bottom and Charm to LEP with enhanced weights for sensitive observables (LEP).
3. Tune underlying event parameters and intrinsic pT separately (Tevatron & LHC).

Professor weights:

- usually 1.0 for considered differential distributions
- 10 for considered PDG multiplicities
- 50 for one of the n-charged multiplicities.

Make use of Professors run combinations to test parametrization.

CMW compatible values of the strong coupling (~ 0.126) are usually produced by free parameter tuning.

In dipole shower two CMW are implemented (multiplicative and additive) and it is consistently treated for NLO merging (not relevant for tuning).

We prefer LO pdfs for MPI and NLO PDFs if matched to higher orders.

Best described in **Eur.Phys.J. C77 (2017) no.12, 876**

(D. Reichelt, P. Richardson, A. Siodmok)