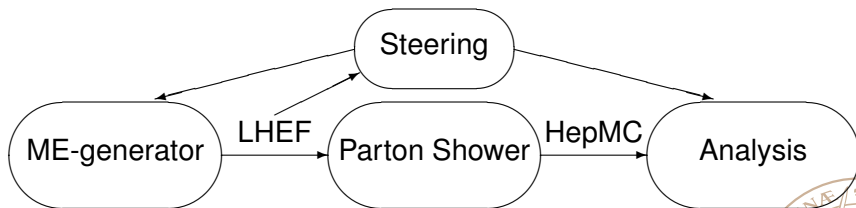# Generator requirements on HepMC

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Information flow

We already had a LHEF mini-workshop where we outlined
some things that need to be passed on through HepMC.

NLO

To handle NLO calculations where we have events with associated counter events, LHEF defines event `group`s.

HepMC has no corresponding feature.

Currently we can use the HepMC event number: All events with the same number should be treated together.

$\implies$ **We should consider allowing for several sub-events in the same `GenEvent`.**

Weights

HepMC already allows for multiple (named) weights.

The names of the weights can be used to convey any information. But LHEF also has more formalized information about scales and PDFs sets.

$\Longrightarrow$ **We could consider formalizing this information also in HepMC.**

XML

But there is more information that could be transferred from LHEF to HepMC.

⟹ **We should allow for passing an entire block of LHEF XML-tags through HepMC.**

There already exist c++ classes for reading and writing LHEF XML tags (soon available on HepForge). These could easily be included in or interfaced to HepMC.

Compression

HepMC ASCII files are typically huge and contains quite a lot of useless information.

Not even `bzip2` can reduce them very much.

At Les Houches 2011 [arXiv:1203.6803] a suggestion for a compressed format with compression factors of ~ 30 were shown.

Too much information?

Do we really need so much information in HepMC?

Much of the (DAG) structure of HepMC is not really useful, and encourages misuse of un-physical information.

In principle we only need final-state particles and unstable hadrons (status codes 1 and 2) and for that we don't really need a clumsy DAG structure.