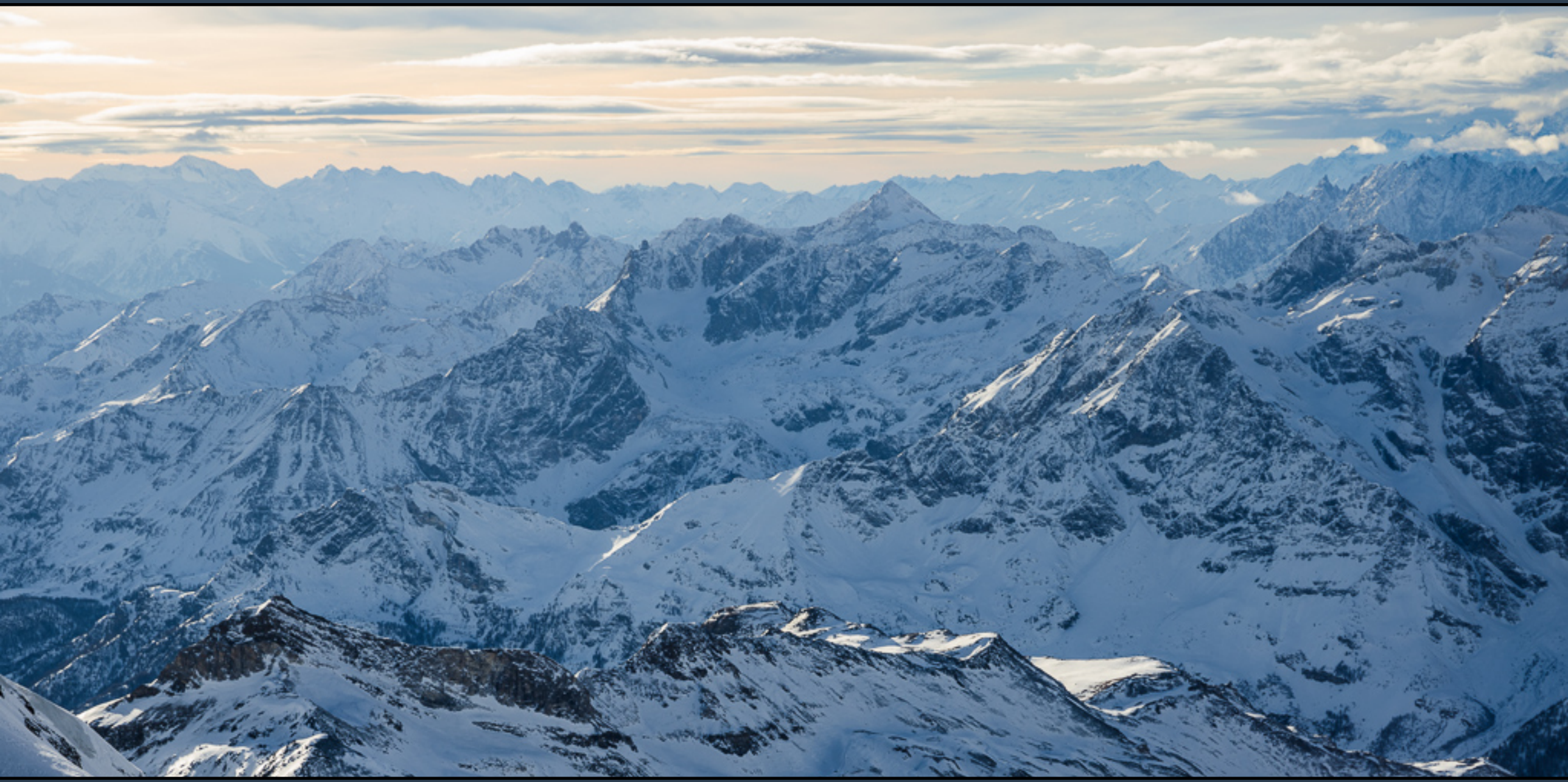
# ATLAS' use of HepMC



James Monk
Niels Bohr Institute

# ATLAS Generation chain

(LHE input)

Event generation

Create HepMC record in StoreGate

Write HepMC record to evgen file

Afterburners (Photos++, EvtGen etc…)

Detector simulation

Digitisation & reconstruction

Make D3PD (reduced event record in flat ROOT file)

# LHE Integration

- Tighter integration with LHEF could be nice, e.g:
  - Copy of the LHE record?
  - A record of the input generator
  - Easily accessible multiple weights (HepMC already support named weights, but underused)
  - Perhaps a record of things like scale choice?

# Event generation

- Again, record of generator name and version (and all previous generators used in the chain) would be useful
- Record of afterburners used, maybe coherent record of event before/after modifications (à la version control, or is that over-complicating?)

# Event Write Out

- HepMC record contains *a lot* of information, most of which is not final state particles.
- Slimming this down saves a lot of disk space
- MCUtils very useful for that purpose
- D3PD (flat ROOT file) can be *over*-slimmed sometimes - missing entire event record. Hard to reconstruct the HepMC event from the D3PD used in analysis - difference between the generator record in the evgen file and what is seen by the analysers.