



ATLAS ROOT DATA FILE FORMAT

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ATLAS and Google meeting

1 event:

Calorimeter

Inner detector

Muon detector

...

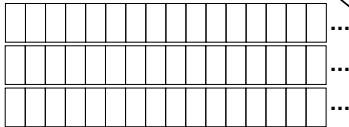
Electrons

Muons

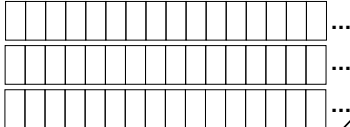
Jets

...

Array of structs/objects with sub-detector infos



Array of structs/objects with kinematic infos of physics objects



Collision events are independent

1 ROOT file:

Array of events:



ROOT
file formats:

Simulation

EVNT

HITS

RDO

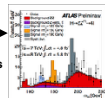
Data

RAW

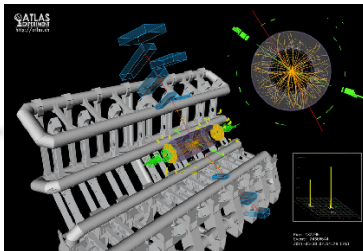
AOD

xAOD

used in statistical analysis
of many events



1 pp-collision
event:



SUMMARY

- The ATLAS data file format is based on ROOT (<http://root.cern.ch>)
- ROOT is a modular scientific software framework C++/python, heavily used in all of particle physics (and more)
- ROOT users guide: [see link](#)
- ROOT I/O: [see link](#)

- ROOT files are usually accessed via POSIX, xrootd or https

- 1 xAOD event is 200-500 kB
- 1 xAOD file is (merged) 1-10 GB
- 1 Rucio dataset of xAODs contains 1-10000 xAOD files