Condor scripts update and FOOT rootfiles production

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FOOT physics meeting 06/03/2024

Condor scripts, where were we?

DATA

shoe/Reconstruction/scripts/runShoeBatchT1.sh

- Experimental data processing
- Documentation inside the file
- Possible to process multiple runs (even all!!) for a single campaign

Arguments

-i	**Input directory** (in /storage/gpfs_data/foot/shared
-o	**Output directory** (in /storage/gpfs_data/foot/${USER})
-c	**Campaign name**
-r	**First run number**
-l	**Last run number** (optional)
-m	**Merge output files** (optional, default "0")

MC

shoe/Reconstruction/scripts/runShoeBatchT1_MC.sh

- MC files processing
- **1 job = 20k events**
- **Campaign and run number are retrieved automatically!**
- Possible to process multiple files for a single run (-f option)

Arguments

-i	**Input file** (in /storage/gpfs_data/foot/shared/SimulatedData)
-o	**Output directory** (in /storage/gpfs_data/foot/${USER})
-m	**Merge output files** (optional, default "0")
-f	**Use full statistics** (optional, default "0")

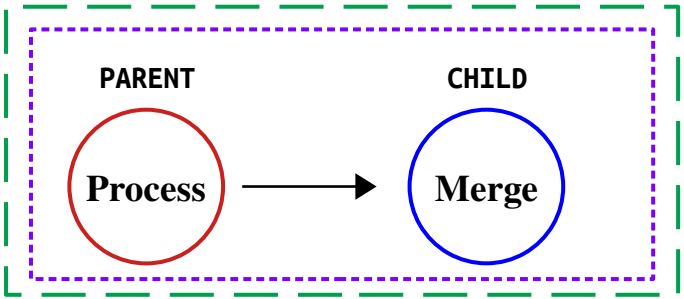
All jobs submitted together → no guarantees that merge starts after processing!

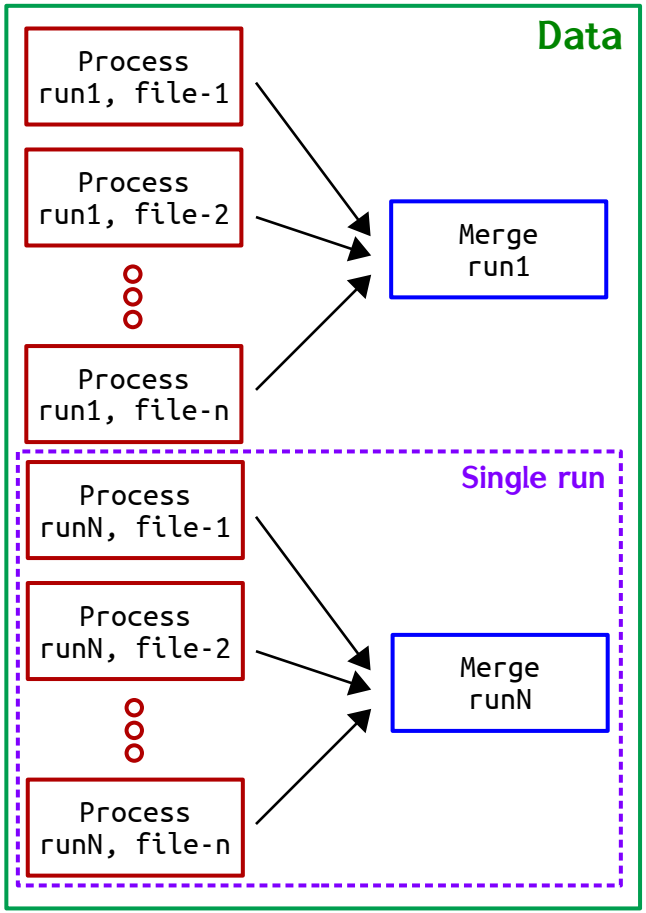
Timeout needed...

DAG (Directed Acyclic Graph)

Job flow control directly inside condor!

- Possible to decide the order of job submission
- No time-out anymore
  - ➔ Merge killed if processing fails
- Comes with a couple of features:
  - ➔ Auxiliary files (.out/.err/.log) automatically downloaded
  - ➔ Completed jobs automatically removed
- Different scheme for data and MC





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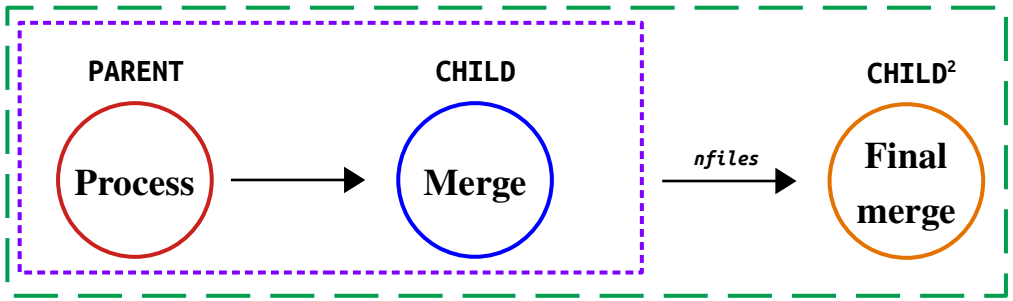

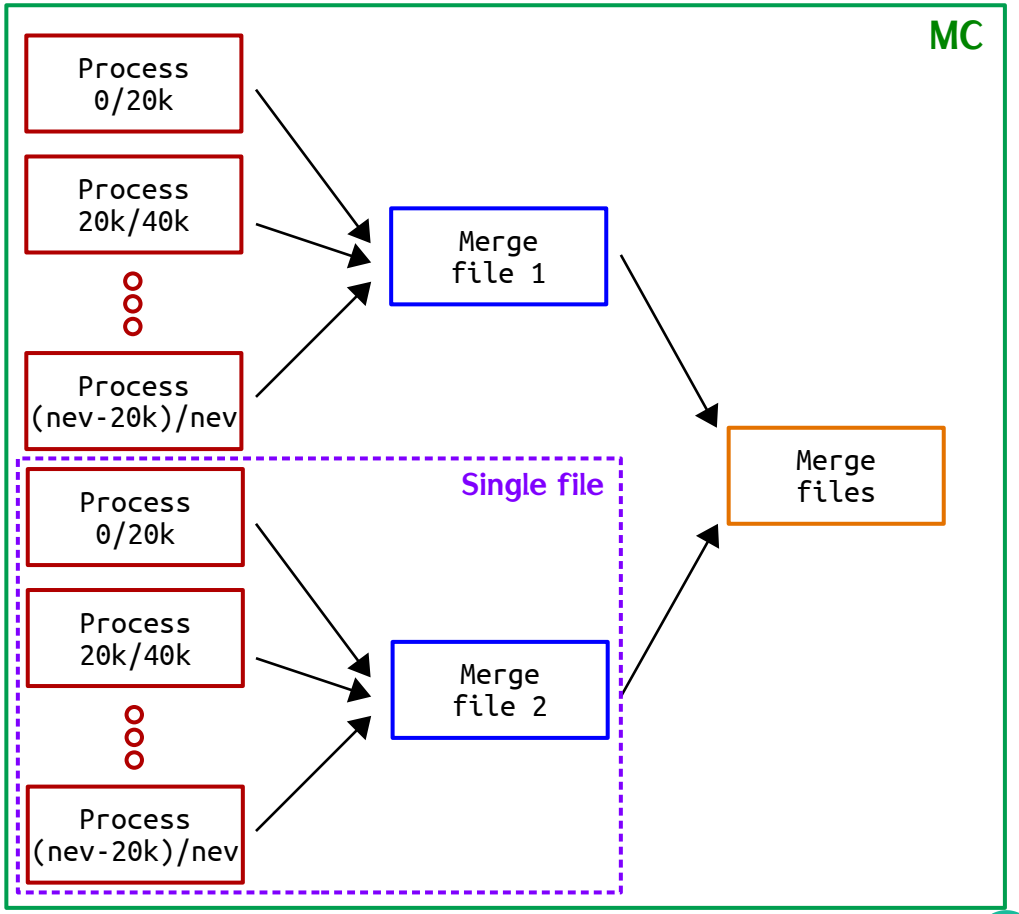

Condor scripts update!

DATA

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- Experimental data processing
- Documentation inside the file
- Possible to process multiple runs (even all!!) for a single campaign

Arguments

-i	**Input directory** (in /storage/gpfs_data/foot/shared)
-o	**Output directory** (**in /storage/gpfs_data/foot**)
-c	**Campaign name**
-r	**First run number**
-l	**Last run number** (optional)
-m	**Merge output files** (optional, **default "1"**)

MC

shoe/Reconstruction/scripts/runShoeBatchT1_MC.sh

- MC files processing
- **1 job = 20k events**
- **Campaign and run number are retrieved automatically!**
- Possible to process multiple files for a single run (-f option)

Arguments

-i	**Input file** (in /storage/gpfs_data/foot/shared/SimulatedData)
-o	**Output directory** (**in /storage/gpfs_data/foot**)
-m	**Merge output files** (optional, **default "1"**)
-f	**Use full statistics** (optional, default "0")

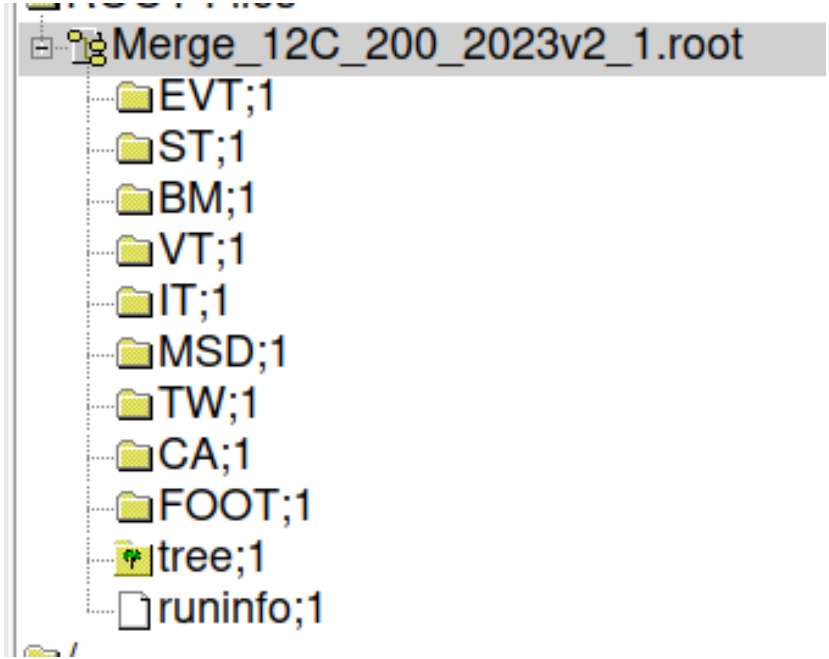
Internal documentation updated in both scripts!

Analysis script for Tier1 in the making...

shoe/Reconstruction/scripts/runAnalysisBatchT1.sh

-i	**Input file** (in /storage/gpfs_data/foot/
-o	**Output file** (in /storage/gpfs_data/foot/, optional)
-m	**Is MC** (optional, default "0")
-n	**No batch** (optional, default "0")

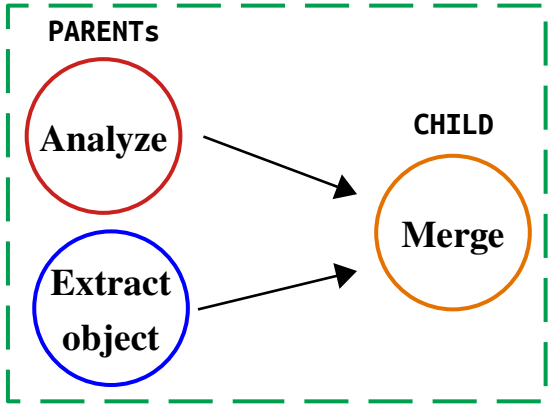
- No need to indicate campaign and run → from input file
- Need to indicate if campaign is MC (add it to runinfo?)
- Output file name optional
  → default = "input_folder/MergeAna_campaign_run.root"
- Possible to analyze in batch but...
- Output of analysis can contain a lot of objects (histos/folders/trees), **merge can be very slow!!**

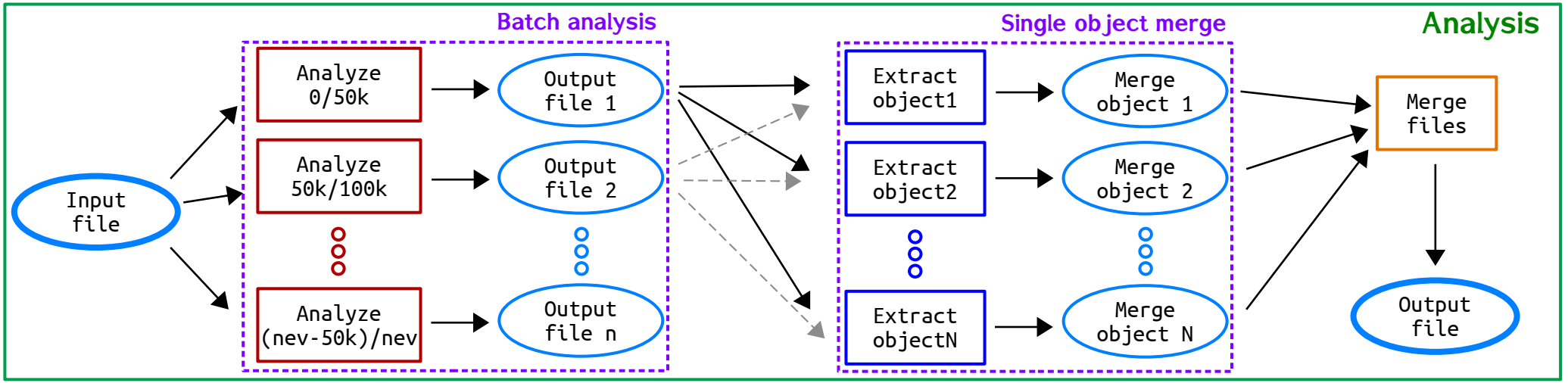


How do we manage that?

DAG of analysis

- **Split merge of output file for single objects!**
- Merge time is almost independent of # of objects
- Analysis and object-merge start together (faster object extraction from single files)





Production?

Need to agree on a set of reconstruction parameters → **production!** *(default in SHOE repo?)*

I/O

EnableTree: y
EnableFlatTree: n
EnableHisto: y
EnableTracking: y

EnableSaveHits: y
EnableRootObject: y
EnableRegionMc: y
EnableElecNoiseMc: ?

Global Reco

EnableKalman: ?
Kalman preselection strategy: ?
N measure in global tracking: ?

IncludeTOE: ?
TOE cuts: ?

IncludeStraight: ?
Parameters: ?

Detectors

IncludeDI: y
IncludeST: y
IncludeBM: y
IncludeTG: y
IncludeVT: y
IncludeIT: y
IncludeMSD: y
IncludeTW: y
IncludeCA: y

From last GM

Production? Yes!

Need to agree on a set of reconstruction parameters → **production!** *(default in SHOE repo!)*

I/O

EnableTree: y
EnableFlatTree: n
EnableHisto: y
EnableTracking: y

EnableSaveHits: n
EnableRootObject: y
EnableRegionMc: y
EnableElecNoiseMc: y

Global Reco

EnableKalman: y
Kalman preselection strategy: Std
N measure in global tracking: 70%

IncludeTOE: n
TOE cuts: n

IncludeStraight: n
Parameters: None

Detectors

IncludeDI: y
IncludeST: y
IncludeBM: y
IncludeTG: y
IncludeVT: y
IncludeIT: y
IncludeMSD: y
IncludeTW: y
IncludeCA: y

From last GM

Production? Yes!

Large-scale processing of ROOTfiles

- "production" branch of SHOE (synch w/ "newgeom")
- **Files already available for everyone**
- **Can be processed w/ new SHOE analysis framework!**
- Campaigns currently included:
  - GSI2021 & GSI2021_MC
  - HIT2022 & HIT2022_MC
  - CNAO2023 & CNAO2023_MC
  - 12C_200_2023v2 (MC)
- **Are other campaigns needed?**
- Possible issues in this phase, please check and let me know!

Data location on Tier1

/storage/gpfs_data/foot/production

Need to re-process files if:

1) Change of configuration/calibration

2) Change of data containers in SHOE

Think about possible automation...