Documentation/instructions for new analysis scripts

Features of the new scripts

- Slightly slower on small files, but able to handle much larger files with no losses
- Human-readable built files!
- Third traceback script is much faster
- R90 parameter added to event-built data and traceback
- Somewhat more useful terminal output
- Only chaining event-built files
- In hitbuilder and eventbuilder, can set timing/energy thresholds near start of file

Name changes etc. overview

Name changed, function the same	
Old	**New**
eventbuilder.C	eventbuilder2020.C
hitbuilder.C	hitbuilder2020.C
finaltrace.C	trace3.C
manysubmit.C	submithitbuilder.C
runbuilder.sh	runhitbuilder.sh

Unchanged

meihimeweighting.C
jobsubmit.C
runsims.sh
traceback.C
trace2.C

Not yet updated

Ge77counting.C
isotopecounting.C
weightclean.C
plotevents.C

Added

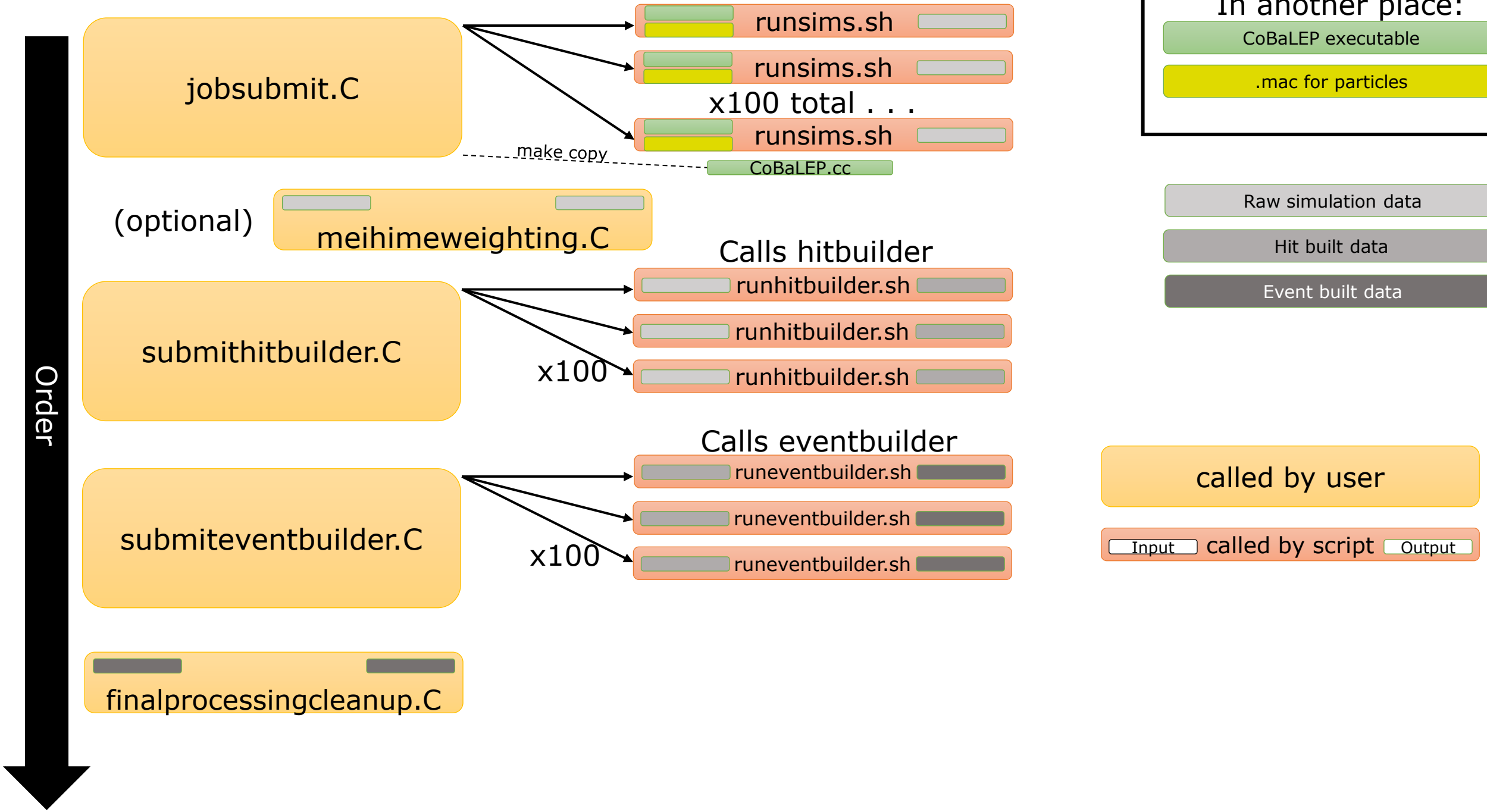
submiteventbuilder.C
runeventbuilder.sh
finalprocessingcleanup.C
plotR90.C

Removed

chainingone.C
chainingtwo.C

Basic recipe for most processing

- User runs a .C script
- .C script runs a .sh script multiple times
- .sh script runs *another* script on the computing cluster


In another place:
CoBaLEP executable
.mac for particles
Raw simulation data
Hit built data
Event built data
Order
jobsubmit.C
runsims.sh
runsims.sh
x100 total . . .
runsims.sh
make copy
CoBaLEP.cc
(optional)
meihimeweighting.C
Calls hitbuilder
submithitbuilder.C
runhitbuilder.sh
runhitbuilder.sh
runhitbuilder.sh
x100
Calls eventbuilder
submiteventbuilder.C
runeventbuilder.sh
runeventbuilder.sh
runeventbuilder.sh
x100
finalprocessingcleanup.C
called by user
Input
called by script
Output

Additional notes

- weighting is currently disabled in the builders
  - To reactivate it, search for keyword ‘weight’ in hitbuilder2020.C and eventbuilder2020.C and uncomment every line
- Some of the variable names in the hit built and event built files have changed – make sure to check them out using fTree->Print() or sumtree->Print() before you start making cuts!
- R90 is a hit-level parameter, so it’s stored as a leaf(vector) in sumtree, like detectornumber or hitenergy
- The .log files have changed names too (these contain all of the job processing information output by slurm)

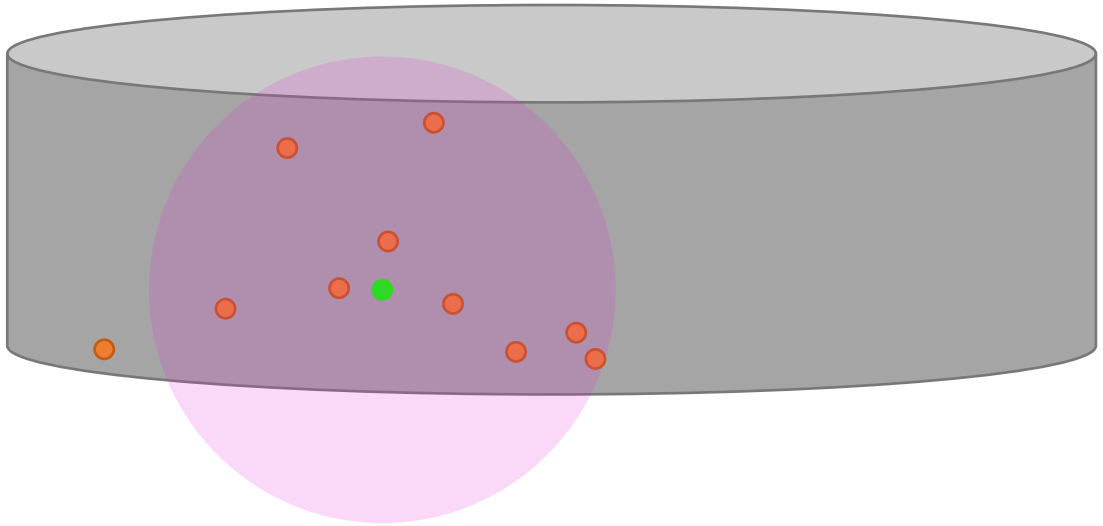
Calculating R90

For an activated detector that passes the granularity cut:

Calculate the “center of energy”, the same way a center of mass is calculated

Find the radius of the smallest sphere, centered on the center of energy, which encapsulates 90% of the total energy depositions. This radius is the R90 parameter.

Choose a cut radius. Events with R90>(cut radius) will be considered MSEs and be rejected



This event would be rejected