Reco After Christmas

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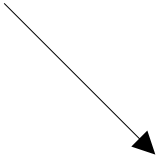
Reco code

- Reconstruction code had extremely minor changes during winter (mainly addition of try except to avoid crashes of specific runs)



Still on winter23 branch: Remember to update your fork now and then

- Ongoing improvements:
  - PMT adaptation and integration (Pietro)
  - Environmental variables readout improvement (Rita)
  - Cython noise treatment integration (Giorgio)
  - Parameters storage (Giorgio)

Reco Parameters

- The parameters for the re-reco of Run3 were chosen and tested on 40 different runs spanning in time along Run3. 3 Sets of parameters were chosen

Set1

Set1	
Parameter	Value
configFile_LNGS	
rebin	4
nsigma	0.6
min_neighbors_average	1.2
vignetteCorr	True
modules_config/geometry_lime	
vignette	data/vignette_runs03930to03932.root
ymin	304
ymax	2304-250
modules_config/clustering.txt	
dbscan_eps	12
dbscan_minsamples	20
dir_radius	28
dir_min_accuracy	0.95
dir_minsamples	12
dir_thickness	6.5
time_threshold	300
max_attempts	3
isolation_radius	5

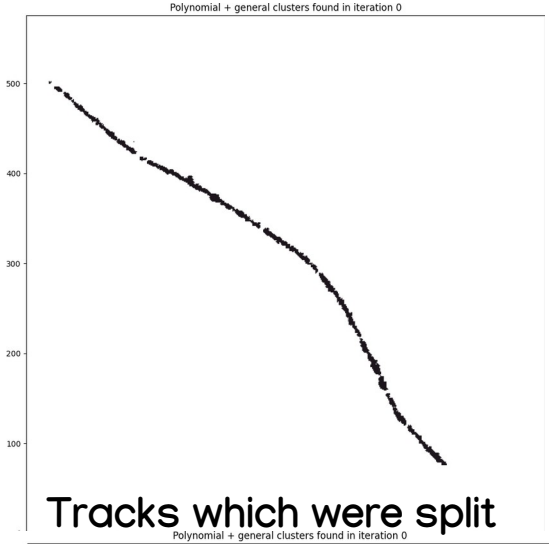
Set2

Set2	
Parameter	Value
configFile_LNGS	
rebin	4
nsigma	0.6
min_neighbors_average	1.2
vignetteCorr	True
modules_config/geometry_lime	
vignette	data/vignette_runs03930to03932.root
ymin	304
ymax	2304-250
modules_config/clustering.txt	
dbscan_eps	8
dbscan_minsamples	20
dir_radius	28
dir_min_accuracy	0.95
dir_minsamples	12
dir_thickness	5.5
time_threshold	300
max_attempts	3
isolation_radius	5

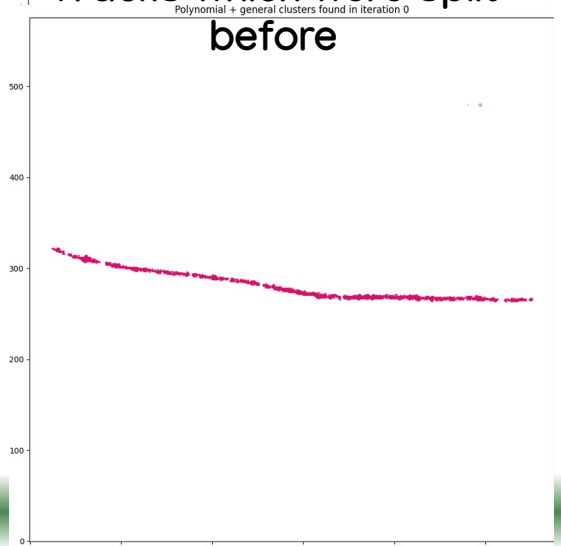
Set3

Set3	
Parameter	Value
configFile_LNGS	
rebin	4
nsigma	0.6
min_neighbors_average	1.2
vignetteCorr	True
modules_config/geometry_lime	
vignette	data/vignette_runs03930to03932.root
ymin	304
ymax	2304-250
modules_config/clustering.txt	
dbscan_eps	2
dbscan_minsamples	20
dir_radius	28
dir_min_accuracy	0.95
dir_minsamples	12
dir_thickness	5.5
time_threshold	300
max_attempts	3
isolation_radius	5

Reco Parameters Tests



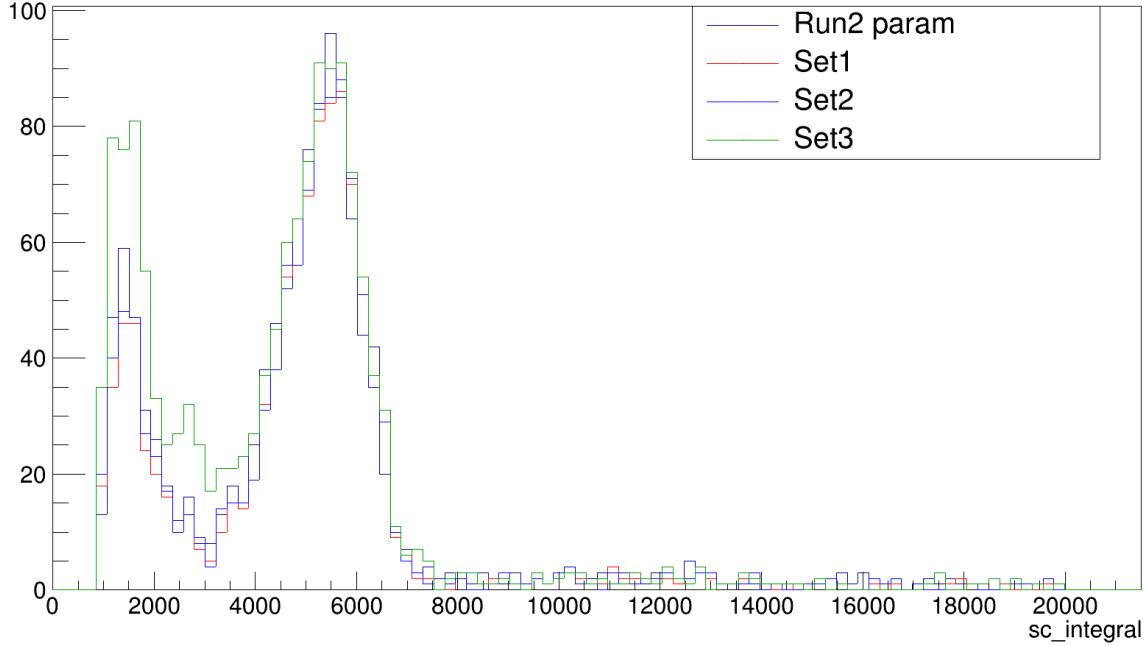
Tracks which were split before



Different sets tested on the same iron calibration run 18368

No change in the energy scale

sc_integral {sc_integral>1000 && sc_integral<20000}



Re-Reco Status

- 2 queues of the cloud machines are being used each with 10 machines with 4 cores (8 GB RAM)

Parameter Set	Run Range		Number of runs per range	Status	Percentage
Set 1 (Table 1)	17362	27845	10483	Running	52%
Set 1 (Table 1)	36664	36840	176	Done	100%
Set 1 (Table 1)	36848	37017	169	Done	100%
Set 1 (Table 1)	37025	37828	803	Done	100%
Set 1 (Table 1)	37836	37869	33		0%
Set 1 (Table 1)	37870	37937	67		0%
Set 1 (Table 1)	37952	39638	1686	Running	92%
Set 2 (Table 2)	27883	34871	6988		0%
Set 2 (Table 2)	35173	36655	1482		0%
Set 3 (Table 3)	34877	35169	292		0%
Set 3 (Table 3)	36658	36661	3		0%
Set 3 (Table 3)	36841	36847	6		0%
Set 3 (Table 3)	37018	37024	6		0%
Set 3 (Table 3)	37829	37835	6		0%
Set 3 (Table 3)	37946	37951	5		0%
Total			**22205**		**37%**

Background May, July, August, AmBe

Background September, October, November

Am

Barium and Europium

Europium low activity

Iron less collimated

ETC:

- 14 d like this
- 9/10 d if cython noise is included

Run4 Autoreco

- Since run 43516 Run4 is being reconstructed with 1 queue of the cloud machines: 4 machines with 8 cores (16 GB RAM)

- Reconstruction is on par with data taking

- Run range 40781–43515 will be reconstructed after Run3 re-reco finishes

Info on Data location

- The rereun of Run3 has been going since the beginning of the year (this morning the status was at 30%). You can find the root files at cygno-analysis/RECO/Winter23-ReReco-Run3/

- At this address you can also find a pdf with the parameter description which I also sent to the reconstruction mailing list

- The reconstruction of Run4 data also started today. At the address cygno-analysis/RECO/Run4/ you can find the root files since 43516. The Set1 parameters is being used for Run4 data

- The Run4 run from 40781-43515 will be analysed after Run3 finishes

- For python users: Run3 and Run4 data analysed after today will also be available in the pkl format for a faster use for python (useless for C++ as far as I know)