

Summary of 2019 data set

Rafayel Paremuzyan

University of New Hampshire

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- Maurik's script.
- Modifications wrt the original version
- List of Production runs (Comparison between Maurik's and Cameron's lists)
- Number of collected events
- Livetime fluctuations. How many days, % of the data with these fluctuations
- Processing times

How Maurik's script works

Two sources of information

RCDB

- Start time
- End time
- Trigger File
- Target
- # of events
- Run type
- #of files
- User comments
- Operators
- Size [mb]
- etc

MYA

- Beam current
- livetime

Preselection

- One of the following tigger files

'hps_v7.cnf','hps_v8.cnf','hps_v9.cnf','hps_v9_1.cnf', 'hps_v9_2.cnf','hps_v10.cnf',
'hps_v11_1.cnf','hps_v11_2.cnf','hps_v11_3.cnf','hps_v11_4.cnf', 'hps_v11_5.cnf',
'hps_v11_6.cnf','hps_v12_1.cnf'

- Run type: PROD66 or PROD67
- # of event > 1M
- Targets: 4um W, 8um W, 15 um W, 20 um W

Charge Calculation

Integral of the “live-time $\times I_{\text{beam}}$ ” from StarTime to EndTime

Output

- RunCharge plot
- An xlsx file with many useful info for each run
- Sqlite3 file with relevant info for each run

Tweaks in the Maurik's script

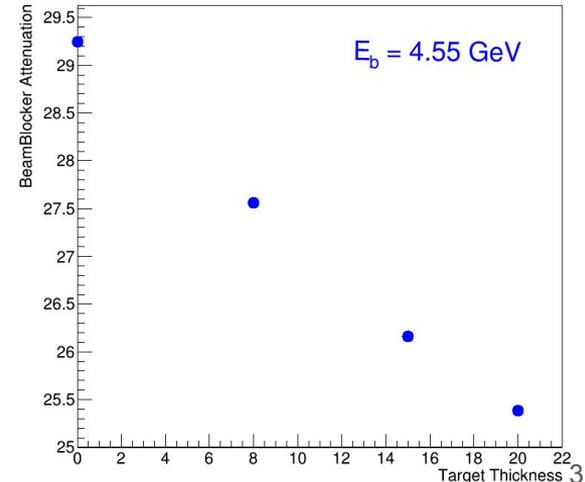
- The 2C21 BPM current was replaced by FCup current
- In the RCDB, there were some runs, which quite apparently had "End of Run" timeStamp to show significantly later time than the last event was written. Also some runs showed earlier "Begin of Run" timestamp that the time of the 1st event.
- Timestamps of 1st and last events were extracted from the evio files, and the RCDB was modified accordingly
- Exclude runs from Cameron's list

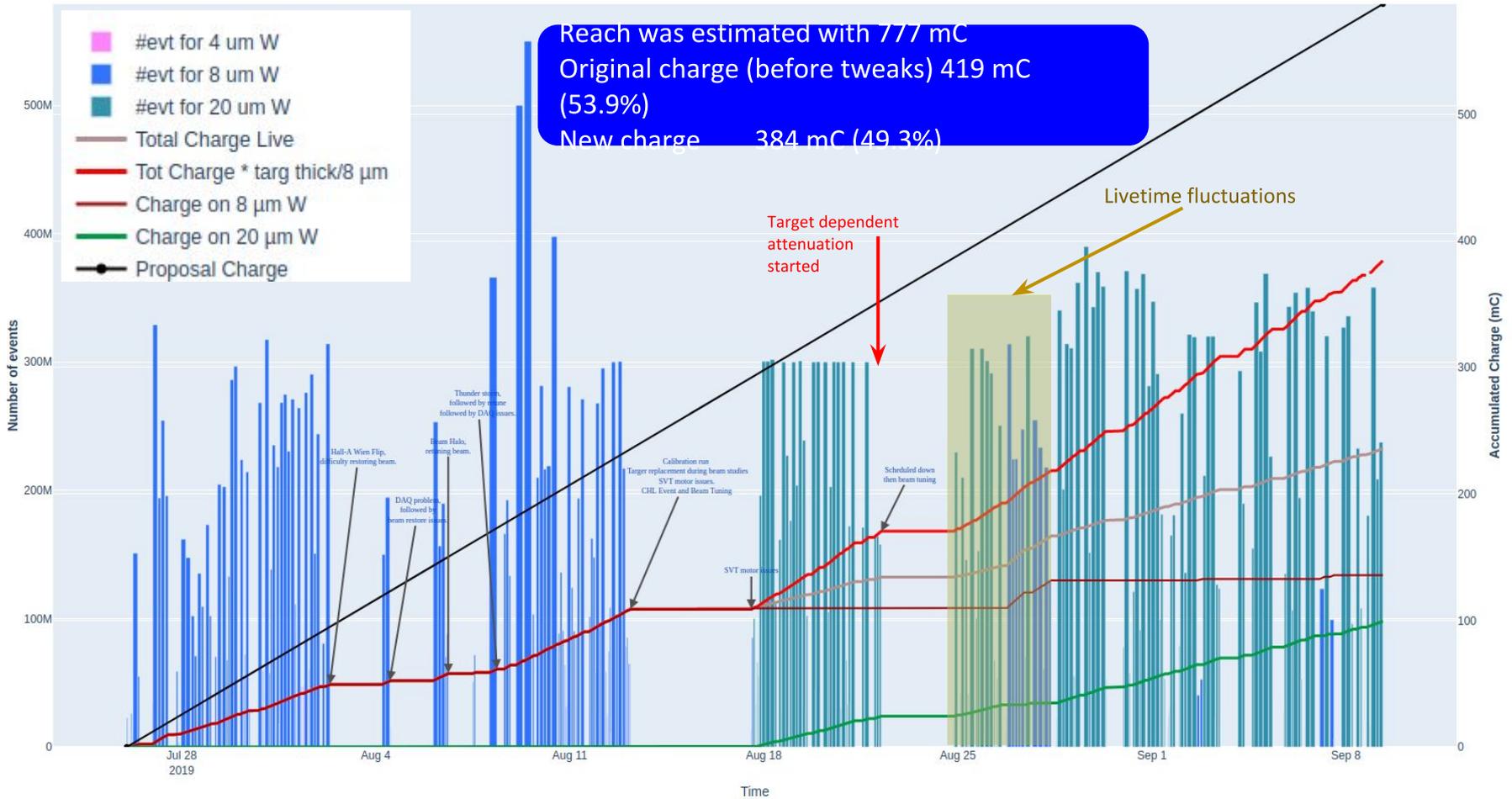
Make target thickness dependent attenuation correction

Until Aug 22, for the beam attenuation the value obtained with empty target was used: 29.24555.

As soon this was measured, Nathan put a target position dependent attenuation, so calculated charge after Aug 22 is fine, but the FCup current before Aug 22 is corrected by "atten(Target)/atten(NoTarget)" factor

Some esthetic staff (changed yellow color to black 😊)





Comparison between Maurik's and Cameron's lists

General: Only runs after July 25, when the SVT was pulled back again to its original place

Maurik's list is automated:

- Should have a production trigger file
 - Should have a W target IN
 - # of events above 1M
- Cameron's list: the Source is google spreadsheet
- The Spreadsheet is not filled very accurately, a big range target and the beam current are not filled in a proper place, and there are even good runs, where this info is not filled at all.

Three lists:

Maurik-Cameron

15 runs

All have a good reason to not be in the list:

- Empty target,
- Non-prod trigger file
- ECal only
- Less than 1M events

Maurik-Cameron (Golden runs)

295 runs

2 runs 10738 and 10739 have Hodo Top and ECal Top times shifted wrt trigger time by about 50 ns.

These are potentially good runs, but need special cooking

Maurik-Cameron

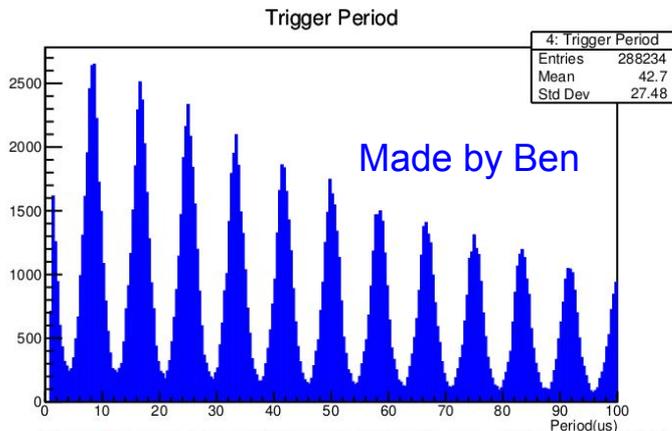
56 runs

- A lot of runs marked as: Junk/DAQ test
- Runs with "Livetime is Bad"
- Some runs with "No entries" in google spreadsheet, though with < 10M events
- few runs with > 10 Mevents

About 5 mC!

Hopefully not, but during the further data analysis could potentially produce some "Non-production" run list 5

Livetime Fluctuations



Singles 3 Top Trigger Period - Run 10514

of events: 5.16 B. 11.2 % of 45.98

In the initial pass0 cooking, we might consider to cook only few files from each of these runs.

MCC changed the Hall-B slit setting (showing Max open in epics), which caused this strong rate fluctuations, and also big livetime fluctuations.

These events can be completely fine for the analysis, however it needs to be looked carefully and assessed. E.g. the tracking efficiency, fake tracks, how much bgr is increasing?

Average processing time was increased by about 2.5-3 times, It is about 600-700 ms/event. Though there are events which take more than several seconds to process. Most probably this will be Fixed by the production cooking.

Processing times

Total: 45.98 B events

Average processing time for 1 event is 250 ± 50 ms for 120 nA 20 μ m runs. (based on several cookings)
However the assumption is during the final cooking this number will go 100 or less ms/event

Assuming 500 paralel jobs and 10 events/sec the total processing time yields 106 days.