

TOP DQM Plots

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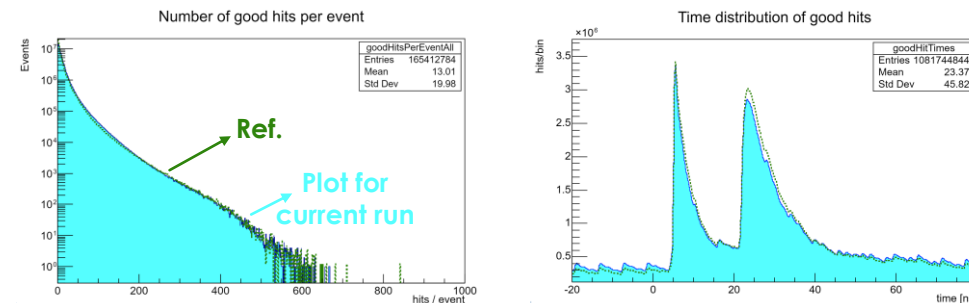
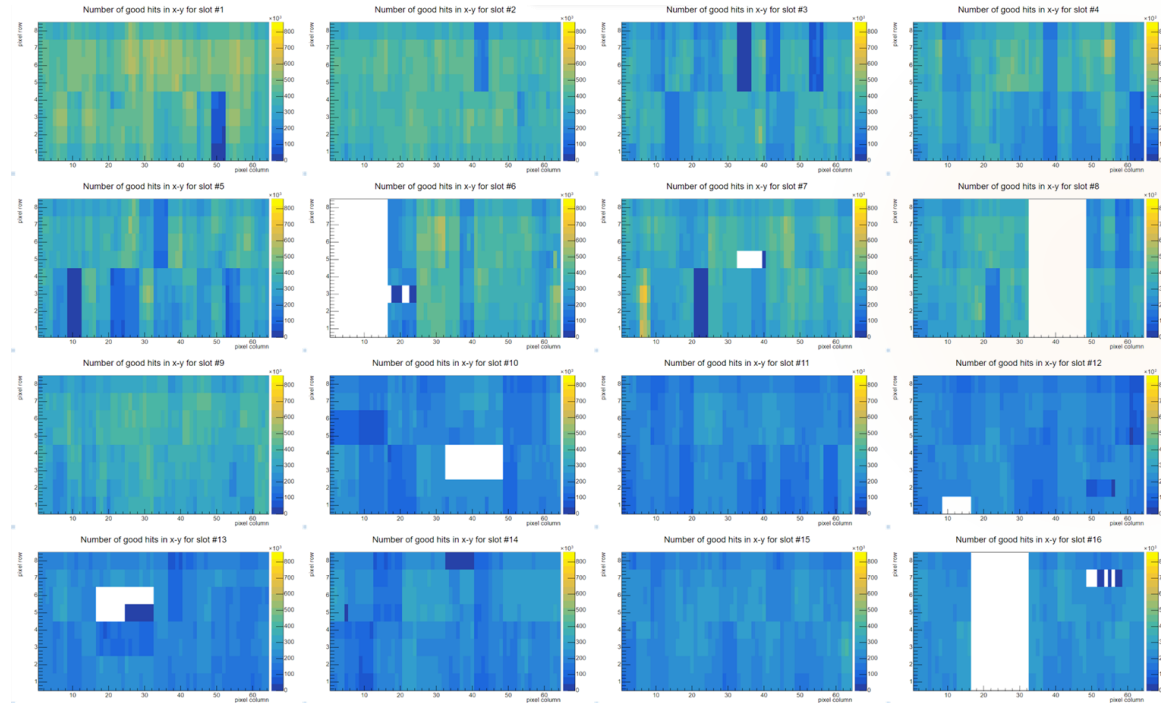
iTOP Data Quality Monitoring (DQM) plots

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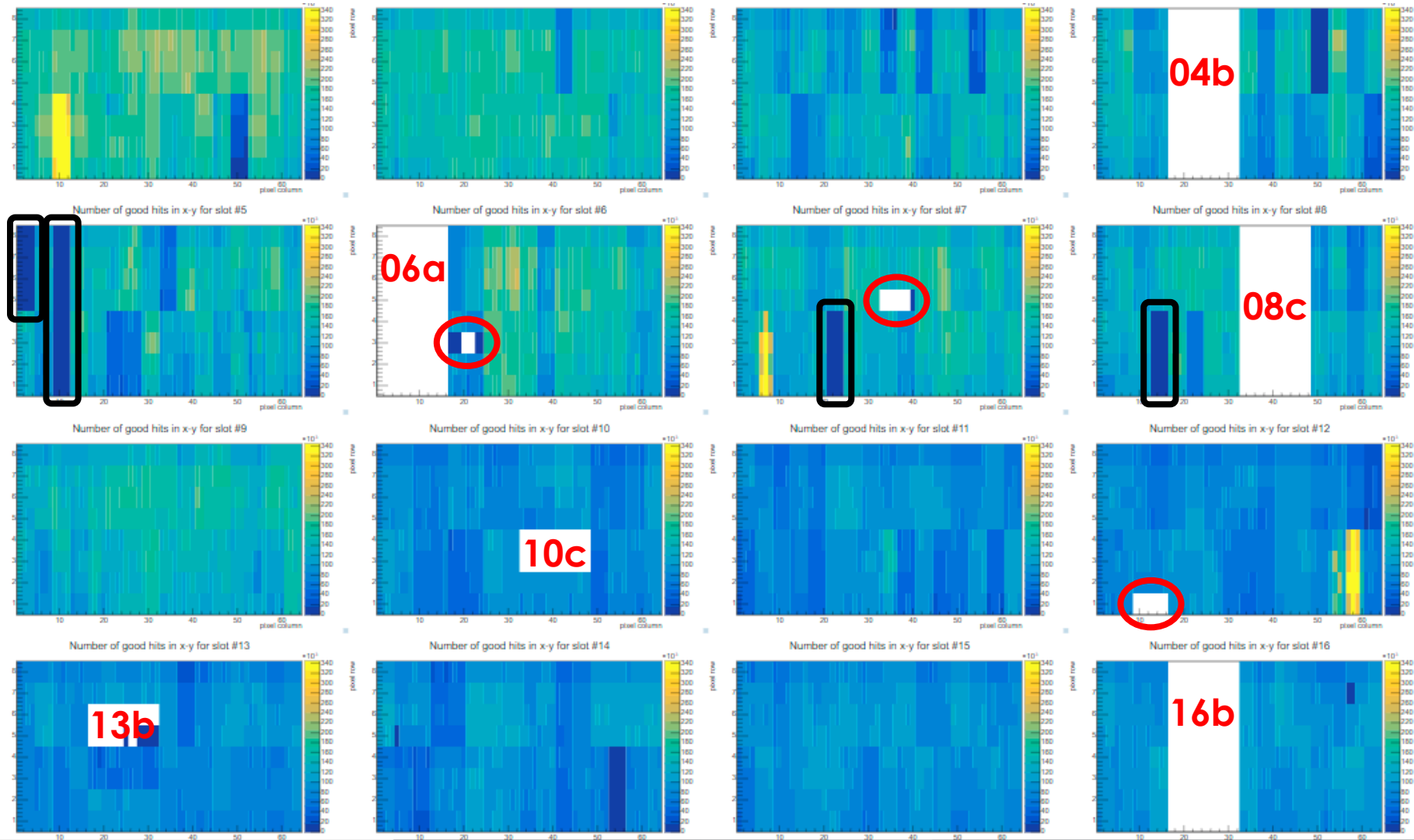
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- ▶ Several DQM plots are available to iTOP shifters and CR shifters to monitor the quality of iTOP data being recorded almost in real time.
- ▶ These plots are extremely helpful in troubleshooting a detector hardware malfunction during a run or if the initialization for one or more iTOP frontends is incorrect for a physics or cosmic run.
- ▶ A well studied reference plot is shown on top of the plot for the current (or ongoing) run for quick comparison.

Examples of DQM plots for iTOP
(run 25, exp. 400)



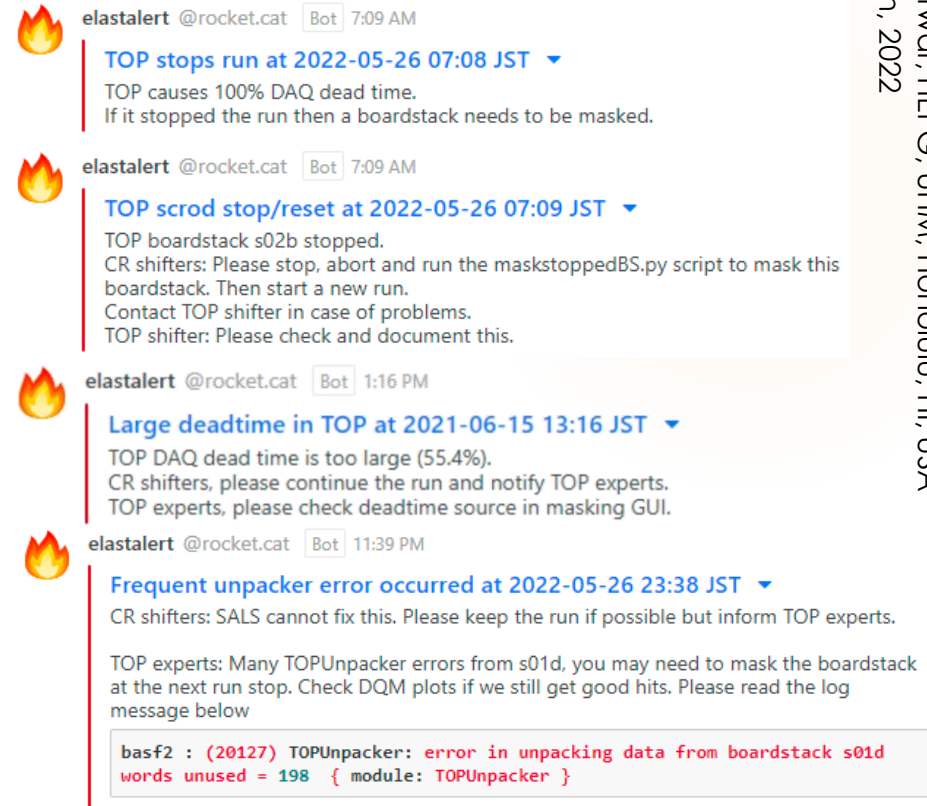
iTOP Hit Map



○ Dead ASIC
▭ PMT off

iTOP Data Quality Monitoring (DQM) plots

- ▶ TOP group is working towards adding more automated color changes in plots for alerting shifters.
- ▶ All known issues are already handled by alerting the shifters on RC, so adding too many alerts using DQMs would be redundant.



The screenshot displays a Slack chat log with four alerts from the user `elastalert @rocket.cat`. Each alert is preceded by a flame icon. The alerts are as follows:

- Alert 1:** `TOP stops run at 2022-05-26 07:08 JST`. Description: "TOP causes 100% DAQ dead time. If it stopped the run then a boardstack needs to be masked."
- Alert 2:** `TOP scrod stop/reset at 2022-05-26 07:09 JST`. Description: "TOP boardstack s02b stopped. CR shifters: Please stop, abort and run the maskstoppedBS.py script to mask this boardstack. Then start a new run. Contact TOP shifter in case of problems. TOP shifter: Please check and document this."
- Alert 3:** `Large deadtime in TOP at 2021-06-15 13:16 JST`. Description: "TOP DAQ dead time is too large (55.4%). CR shifters, please continue the run and notify TOP experts. TOP experts, please check deadtime source in masking GUI."
- Alert 4:** `Frequent unpacker error occurred at 2022-05-26 23:38 JST`. Description: "CR shifters: SALS cannot fix this. Please keep the run if possible but inform TOP experts. TOP experts: Many TOPUnpacker errors from s01d, you may need to mask the boardstack at the next run stop. Check DQM plots if we still get good hits. Please read the log message below"

The fourth alert includes a code block with the following content:

```
basf2 : (20127) TOPUnpacker: error in unpacking data from boardstack s01d
words unused = 198 { module: TOPUnpacker }
```

Thank you for your time and attention.

- Harsh Purwar
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