TPG & trigger commissioning in NP04

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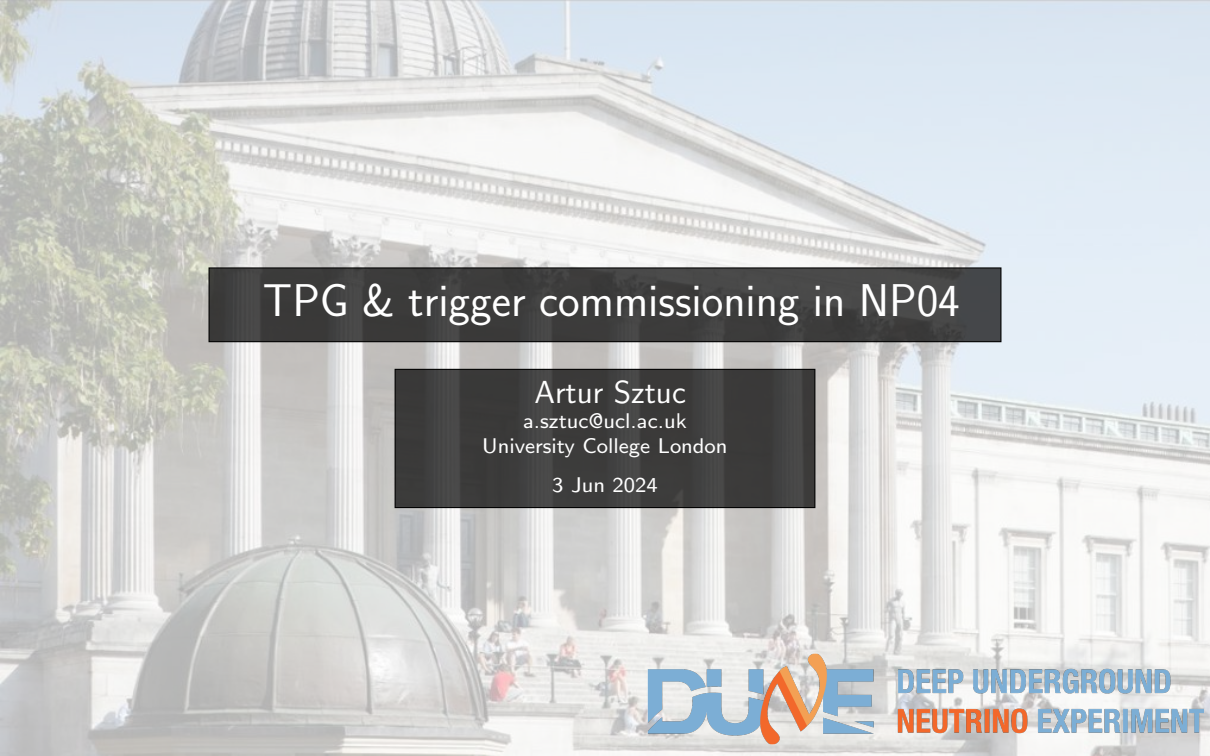
3 Jun 2024



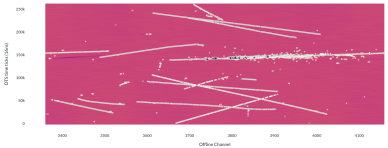
1. Introduction
2. High TP rate issues (Artur)
3. TPG commissioning (Ivana)
4. Trigger issues & commissioning (Michal)
5. Summary

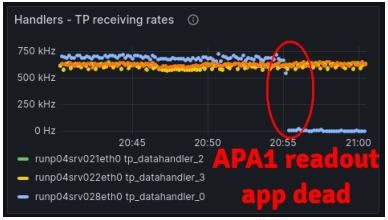
Plan:

- Start work on 20th of May, 3 days of TPG commissioning.
  - Follow past coldboxes: one day per TPG algorithm.
  - Threshold scans for collection & induction separately.
- 2 days off for offline analysis to prepare trigger configs.
  - Using TP data collected in the first 3 days.
- 5 days of trigger commissioning!
  - Test most of the algorithms tested at the coldboxes + ADCSimpleWindow.
  - Test some of the MLT logic for merging trigger decisions.

Instead, we spend $\sim$7 days on TPG commissioning, 1-2 days on trigger, and the rest on resolving hardware issues.

More TPs than expected

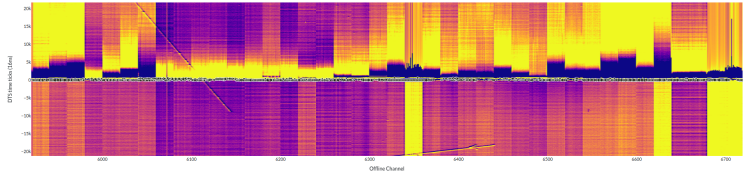




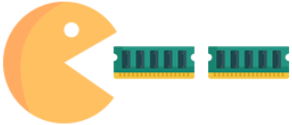
Readout & trigger not keeping up with the TP rate

ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1004141 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1004223 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1004290 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005210 / 1000000 --...	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005487 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005501 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005522 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005698 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005891 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005632 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005624 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005822 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005629 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005648 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005810 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005861 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005725 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005700 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005689 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
ER...	2024-05-24 13:40:15	runp04srv021eth0	tp_link_2: Unable to push within timeout period (timeout period was 1 milliseconds). Occupancy is 1005919 / 1000000	ionamanger::FollyQueueTimeoutExpired	np04-srv-021
INFO	2024-05-24 13:40:11	trigger	Trigger is active now	trigger::TriggerActive	np04-srv-018

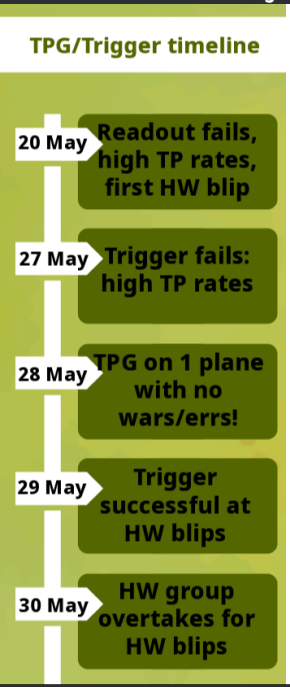
Frequent hardware blips on all APAs & planes



Mem leak in the trigger



Fair to say did not go as planned, but it is not all bad.



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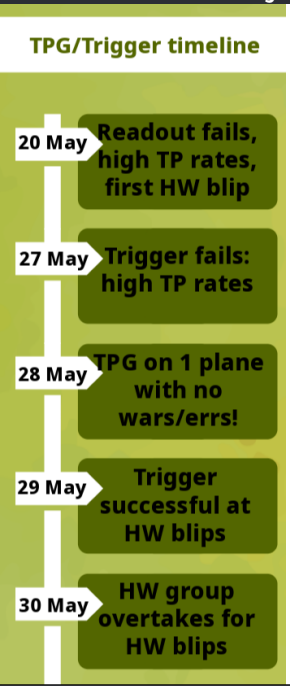
  - First Hardware blips/anomalous events spotted.
  - Days of testing solutions follow...



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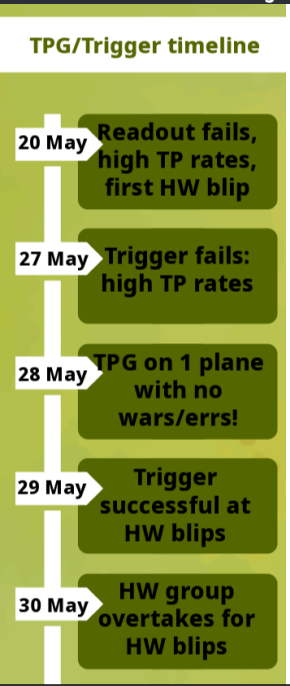

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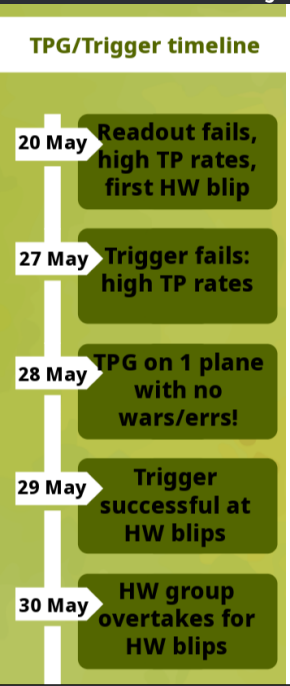
  - More solutions ready for testing to enable TPG on all planes!



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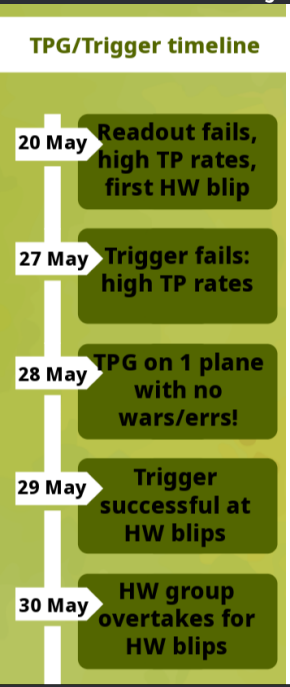

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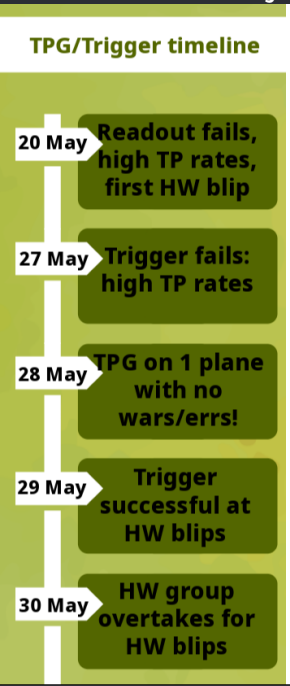

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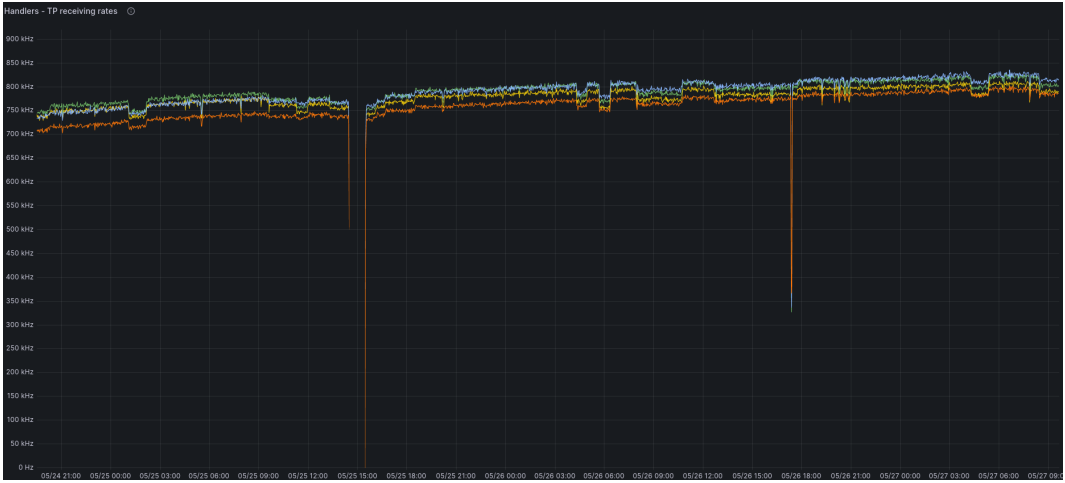
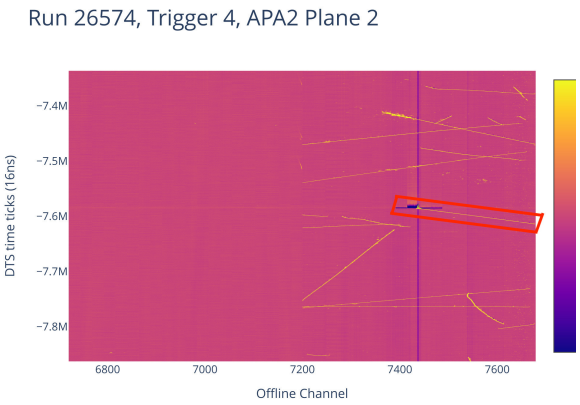
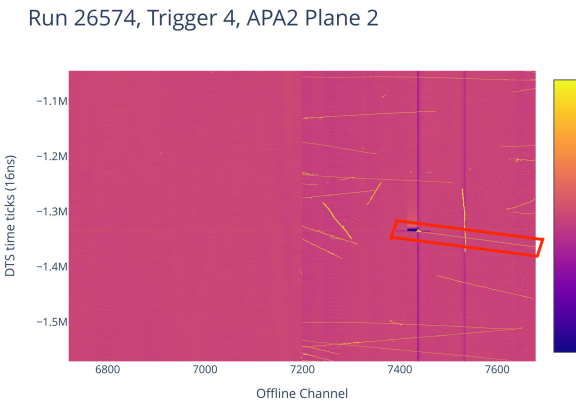
- **1 Jun**: Successful laser calibration run!



- Purity kept getting better over the first $\sim$ week and a half.
- We had to re-do TPG scans in the second week.
- The above is from an over-the-weekend run.

- Very preliminary





- Successful laser system tests last Saturday, seen laser in the event display!
- Long (134ms) readout window, laser at 10Hz, had to look “by hand”.

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