HVMaster
+ run elog

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HVMaster

- HVMaster is daq_slc node (daemon) that collects and controls status of subdetector HV systems
  - Decides whether it's safe to have beams/injections in machine and transmits status to accelerator control
  - Receives “HV ready” signal from accelerator control and software interlocks Belle II HV systems
- Basically running stable now
  - no more bad hiccups due to HVMaster logic since early phase 3
- Lack of consensus on HV states and their behaviour
  - Assumes beams can only be injected in OFF and STANDBY, but not in transition states
  - Arcane detail rules, e.g. by default accelerator injection is inhibited when there is any local run (ind. of HV)
  - “power supply status” ↔ “HV status”:
    - PXD: OFF → off; STANDBY → LV on, bias off; PEAK → LV on, bias on
    - e.g. TOP: OFF → off; STANDBY → LV on, bias on but below gain; PEAK → LV on, bias to full
    - ECL: not included in HVMaster, deemed safe to always have bias on
  - Subdetectors start to twist their broadcasted “HV status” to not disrupt operations
- All of this could be rediscussed, but: n people in discussion, $O(n^2)$ opinions, O(n!) discussion time
  - If you have a detailed proposal, feel free to submit.

Automatic Trip Recovery

- CDC HV trips due to beam background levels, CDC HV status goes to "TRIP".
  - current mode of operation: shifter stops the run, clicks "RECOVER" on HV panel, waits for HV recovery, restarts run when things are fine again.
  - efficiency depends on CR shifter attention level
- Could be fully automated: HVMaster should pause/stop the run on TRIP, RECOVER the subsystem and RESUME/START the run again.
  - already decided that HVMaster will take control of such situations
- PAUSE vs. STOP: conditions database is not designed to deal with conditions changing over the course of a run, so conditions db people prefer STOP/START (new run number).
  - DAQ experience shows that START/STOP does not always work without ABORT, but full SALS takes a lot of time.
  - I say: let's try both and see.
- Since PAUSE not yet available (see Nakao-san's talk), I will proceed with STOP/START to test the logic and performance. Will start tests with Nanae-san for CDC next week (I hope).

General Treatment of Tripping HV Channels

- CDC is an easy case: 9 HV segments (superlayers)
  - One tripped segment invalidates whole CDC, so data taking should always be interrupted
- e.g. TOP has 512 PMTs, single tripped PMT likely does not invalidate Belle II performance
  - Additional problem in TOP PMTs: trip recovery is not reliable, channels sometimes trip continuously
  - TOP HV daemon does not broadcast “TRIP” status when single PMT trips
- e.g. PXD has 20 PXD modules (40 in full installation)
  - ???
- What about ECL? Not even included in HVMaster, but maybe it never trips?
- My proposal: ask subdetectors to decide how they want to behave and implement their HV status broadcast accordingly.
  - Get an overview and check for more complicated edge cases

Run Elog Daemon

- PXD people implemented a very nice tool to automatically generate elog entries for each run
  - Has been developed and operated by PXD people so far
  - See Bjoern's slides at 33rd B2GM
- Will be run on rc01.daqnet.kek.jp from now on
- Fundamental problem: needs DESY credentials to start.
  - DESY does not allow non-person user accounts
  - Need someone in front of screen to type in their user and password every time the service is started