VXD Cosmic Run

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last phase of PXD commissioning in B4 cleanroom: VXD cosmic run
weeks of preparation for the combination of PXD and SVD: Felix, Felix, Hua, Varghese
issues: preparation for B4 DAQ, MARKO leakage and water chiller
only few days left for the cosmic runs:

- first cosmic run PXD + SVD 31.10. "just a couple of min"
- "continuous" cosmic runs from 06.11. on (initially scheduled until 09.11.)
- from 10.11. no PXD expert at KEK $\rightarrow$ remote shifts required

big thanks to all shifters who spent their weekend including the nights: Martin, Maiko, Varghese, Qingyuan, Björn, Simon and the supporters Botho, Harrison, Philipp

- Remote control of PXD is working!
  PXD shifts can be taken from Europe, given the connection quality stays
  (might decrease with more connections to KEK during Belle II runs?)
  It takes some time and guidance to set up everything! Prepare well in advance!

- OVP 1.:
  triggering during ramping up for several modules (which ones?)
  critical step: increase clear-on to 19 V
  (this issue was never seen in labs or at DESY before)
  manual (slow) increasing of clear-on worked
  $\rightarrow$ make it slower in the power up sequence!

- OVP 2.:
  triggering during operation (which modules? / only backward?)
  reason not clear: so far no indication in the archived values of voltages and currents
  (might be short spikes which are not seen by the slow control)
  $\rightarrow$ influence of temp readout not clear? just in case it was turned off for those modules
  $\rightarrow$ increasing the current limits for clear lines should help

- module 1011:
  high clear currents $\rightarrow$ automatic power up not working
  only detected on Sunday (manually it was possible)
  $\rightarrow$ needs tests + optimization to work also automatically
- module 1032:
  very bad matrix, module was masked all the time
  $\rightarrow$ needs tests + optimization before it can be used

- desperately needed (also for the expert shifters): combined status
  $\rightarrow$ not correctly applied voltages must be seen immediately as well as "hidden"
  clock configuration, trigger mismatches, filling DHC buffers, lost links, ...
  it's just not possible to keep an eye on about four OPIs per module all the time

- minimum 2 weeks (+1 contingency) are required to bring the PXD in a state that it can be used in an automated way
  $\rightarrow$ this needs to be local work, independent from outside (DAQ tests, firmware tests, cosmics...)
  - reliable power up + down for all modules
  - stable supply states for the modules (OVP)
  - pedestal upload
  - offsets (completely unclear why offsets from the lab don't work but make pedestals even worse!)

First cosmic track through SVD + PXD
But we can only hope that the data taken is meaningful. There was no data quality
measurement beside the DHP rate plot.
In fact for a short time I was shocked by this email:
[vxd-commissioning] bad garbage