Summary of the status of the DY-Trigger in 2018

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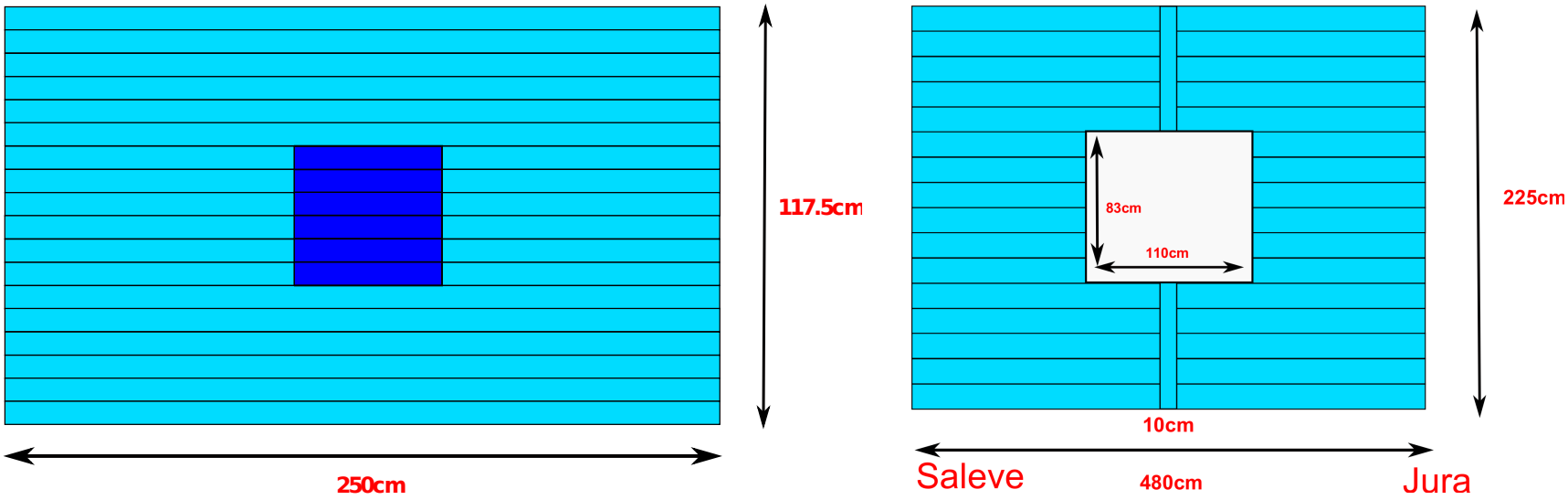
5. Juni 2018

Modification on Outer Hodoscopes

$HO3Y1$ $HO04Y1/2$



- Change back the central region to the configuration of 2015
- Produced two new slabs for HO03 since the old one were modified for DVCS2016/17.

Modification on Middle Hodoscopes

Moved the middle horizontal hodoscopes back to the position of 2015

- HM04Y1 to X=15.0 cm with respect to zero beamline (was X=58.5 cm during DVCS run of 2016/17).
- HM05Y1 to X=20.0 cm with respect to zero beamline (was X=74.5 cm during DVCS run of 2016/17).

Modifications on LAS Hodoscopes

- Putting back H1 to the position of the survey report of 2010 with a precion of $\pm$ 0.5 mm and install a new fixation.

- Installation of new mu-metall shielding in the central hole region of H1.

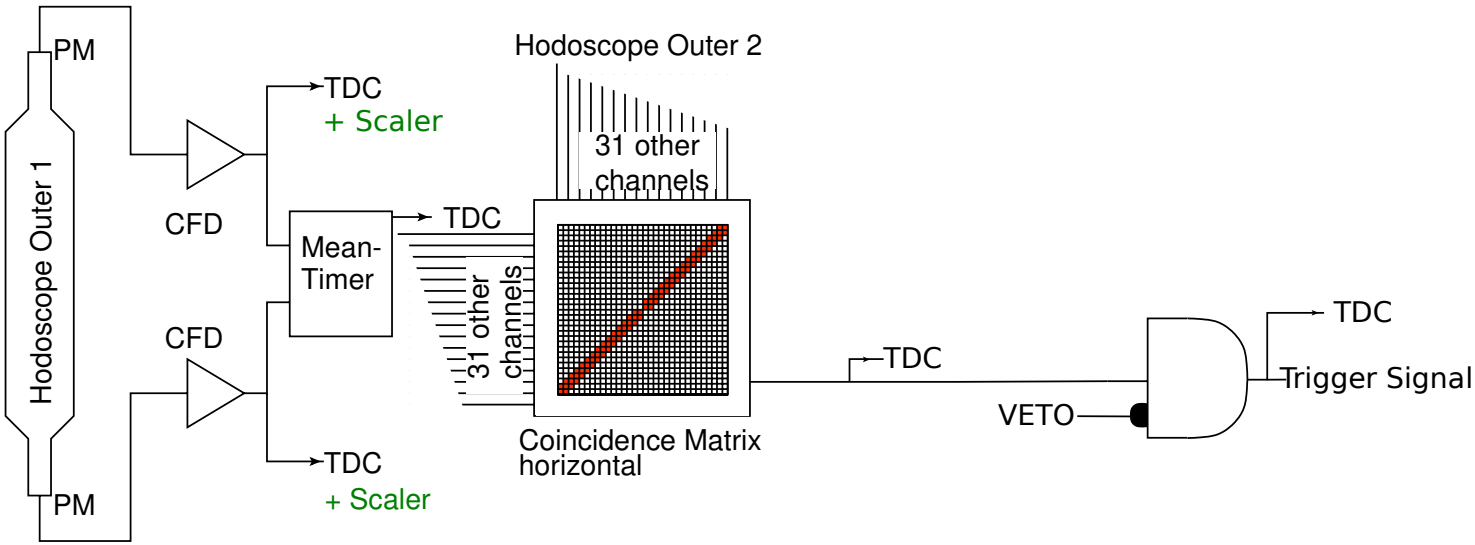
E989-03 from Hamamatsu (thickness 0.8 mm) instead of self made shieldings out of 0.35 mm mu-metall

$\rightarrow$ Measurments show a gain of 5-10% of the signal amplitude in present of the SM1 field.

Work during commissioning

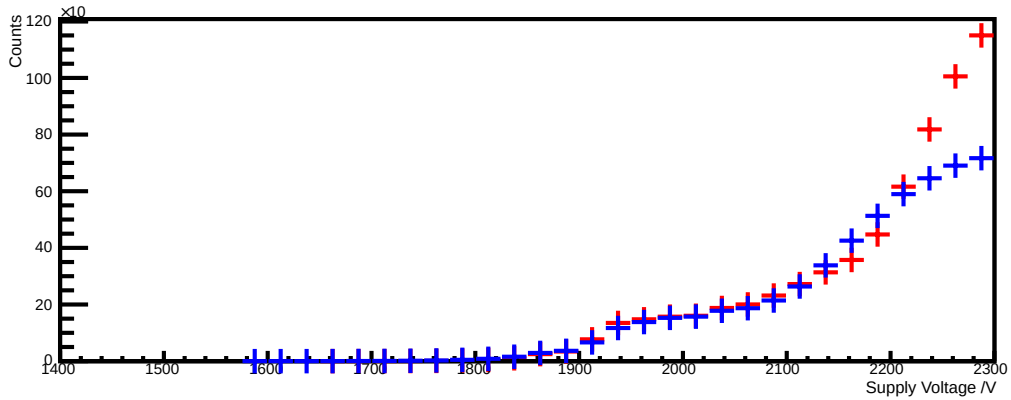
- Check the hodoscopes for light tightness.
- High voltage scans to determine the working point for all hodoscopes.
- Single muon matrices were timed in.
- Timing of the Vetos.
- Setup and timing of the di-muon trigger.
- Setup of the majority Veto.
  (Veto for event if more then 4 simultaneous hits in top/bottom part of H1
  $\rightarrow$ requested for DAQ stability)
- Change of horizontal hole size of VetoInner 1.
- Shortening of the veto gates to reduce the veto dead time.
  (possible since the hodoscopes are in a good shape)

Additional Monitoring Features



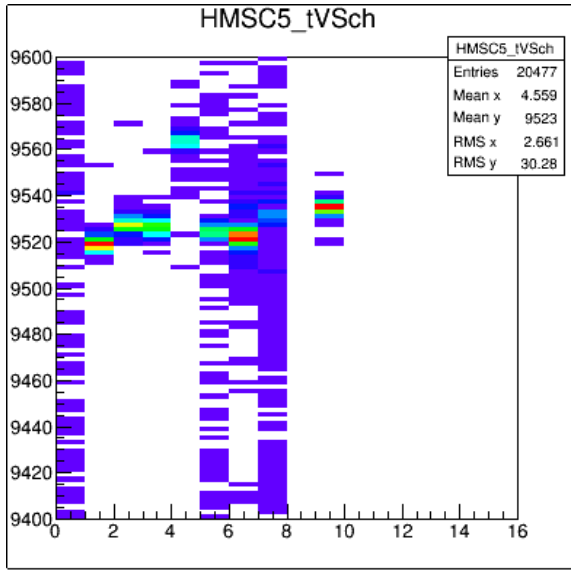
Adding signal splitter and scaler direct after the CFDs:

- Real-time monitoring of un-triggered rates of PMTs
- Determination of workingpoint under final condition for all PMTs



Installation of unprescaled TDC for trigger bits

As requested an additional TDC was installed to get the un-prescaled trigger bits. They are available on the HMSC5 TDC:



Time distribution of Triggers in HMSC5 TDC.

But not yet included into coral/phast (modifications of decoding library ?)

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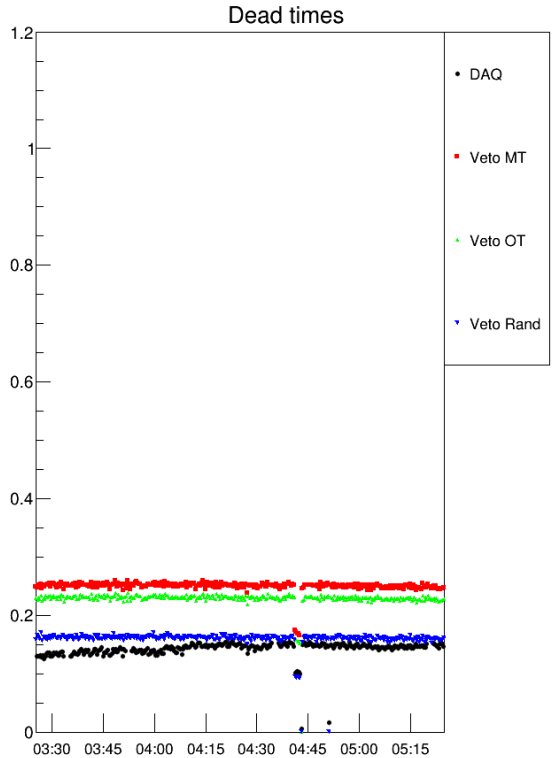
Dead time measurments

Included continuously measurements for dead time of middle and outer:



Data accessible via DCS/MYSQL/CDR.

For LASLAS-Trigger no continuously measurements is possible

$\rightarrow$ Weekly manual dt-measurements of LASLAS planed during the run.

List of used triggers in 2018

TB	Short-Name	Trigger-Elements	Mode
0	MT+LAST	Dimuon Trigger (Middle and LAS)	coinc. (40 ns) LAS&MT
1	MT	One muon Middle Trigger	target pointing
2	OT+LAST	Dimuon Trigger (Outer and LAS)	coinc. (40 ns) LAS&OT
3	OT	One muon Outer Trigger	target pointing
4	CT	Calorimeter Trigger	0.7 MIPS threshold SM
5	VI	Inner Veto	coinc. VI1&VI2
6	Halo	Halo Trigger	any coinc. hit in HO04 & H2
7	BT	Beam Trigger	SciFi1 X&Y
8	LAST 2mu	Dimuon Trigger LAS	or of 3 components
9	LAST 1mu	One muon Trigger LAS	target pointing
10	TRand	True Random	new sources tuned to 20k/spill
11	NRand	Noise Random	

LAST 2mu composition:

HG01 mult.$\geq$2 & HG02Y1 mult.=1 & HG02Y1 mult.=1

HG01 mult.$\geq$2 & HG02Y1 mult.$\geq$2

HG01 mult.$\geq$2 & HG02Y2 mult.$\geq$2

Trigger Efficiencies

Trigger efficiency runs with muon/pion beam during polarization of the target are planed on a regular basis.

Including CALO Trigger in default physics data taking for di-muon trigger efficiency

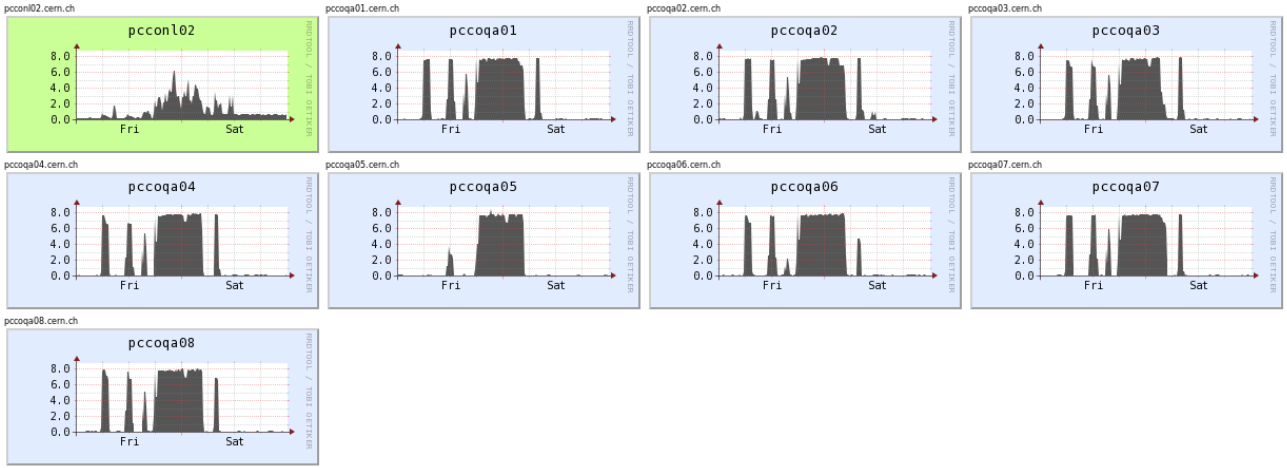
Using un pre-scaled trigger-mask to calculate (single-)muon efficiencies with physics data.
(have to be integrated in the decoding library)

Qualle Cluster I

Since 2011 a blade center with 8 computation nodes was available but not used.

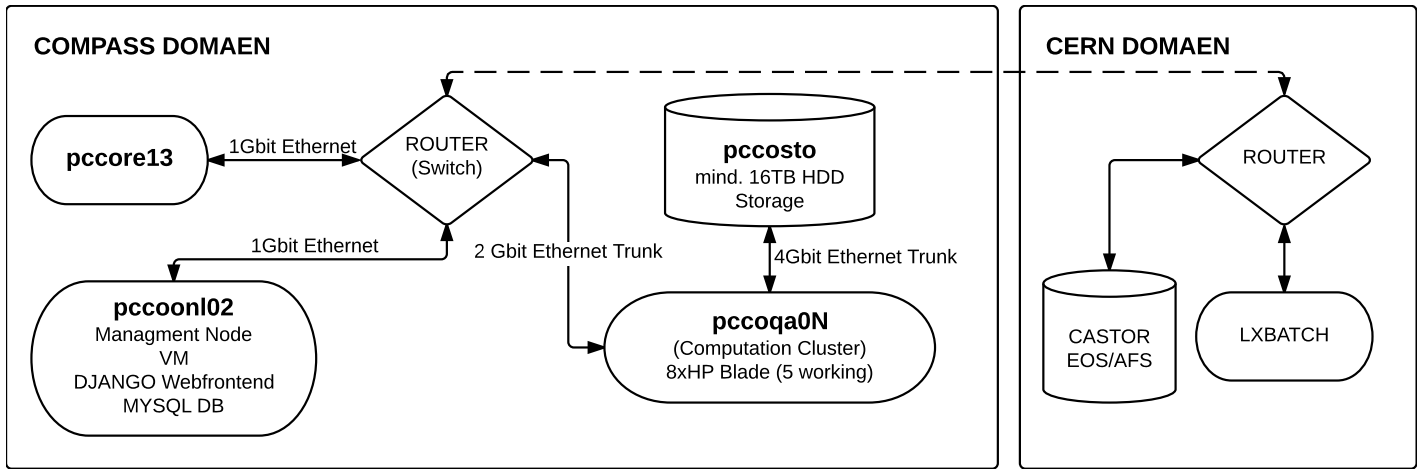
Fully working again since the begin of 2018 (spare parts from TUM).

- 8x Computation nodes HP Blades
  (2x Intel XEON X5355 (8Cores in total per node) ,16 GB Ram, 600 GB HDD)
- 1x Master node (old pcconl02 running as master node)
- 1x Storage node (Xeon E3-1270v6 - ordered by Mainz will be arrived later this month)



HTCondor installation for distributing the jobs over the Cluster.

Qualle Cluster II



- Access to online data on the readout engines and databases
  $\rightarrow$ Decoding of a part of the recorded data to determine T0s and hodoscope parameters on a daily base

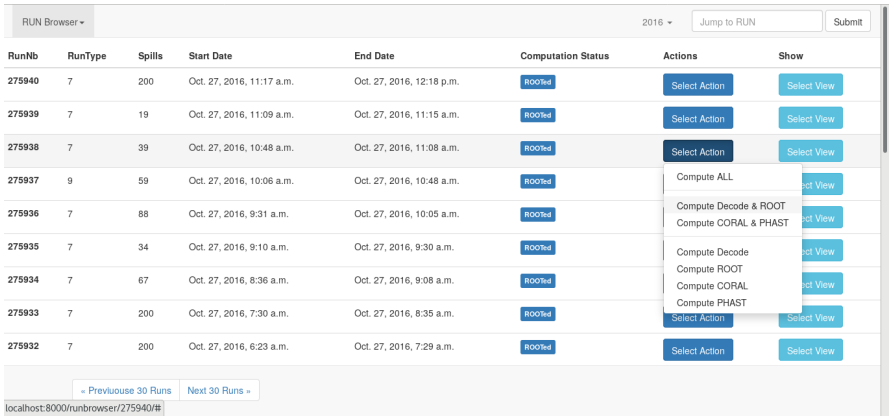
Next steps:

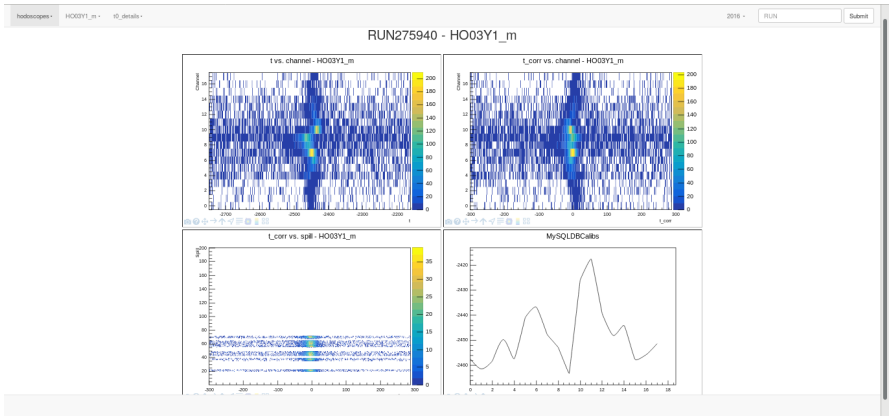
- Access to CASTOR data (in touch with IT-Department for it)
- Reconstruct also a part of the data for further analysis

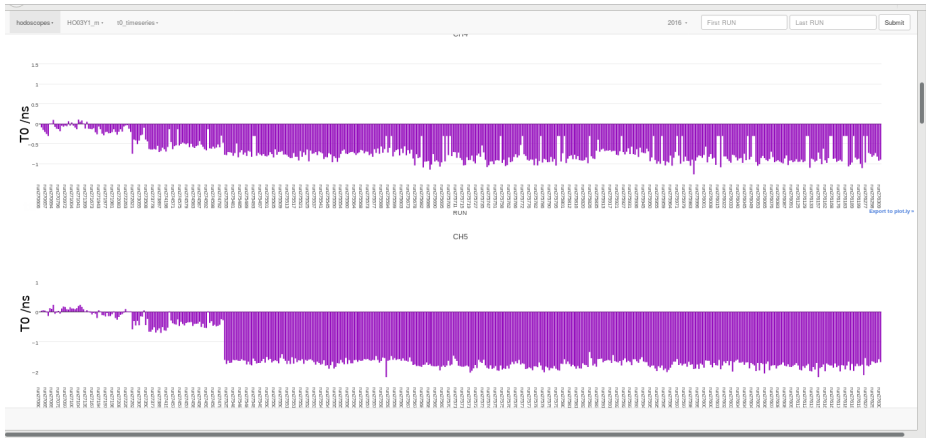
But also available for other detector experts who need to process data!

Qualle Web Frontend

Easy access to the produced data via web-fronted based on django and jsroot







→ work still in progress.